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THE GENERA OF THE  
AFRICAN LYCAENIDAE  
(LEPIDOPTERA : RHOPALOCERA)

H. STEMPPFER

BULLETIN OF  
THE BRITISH MUSEUM (NATURAL HISTORY)  
ENTOMOLOGY

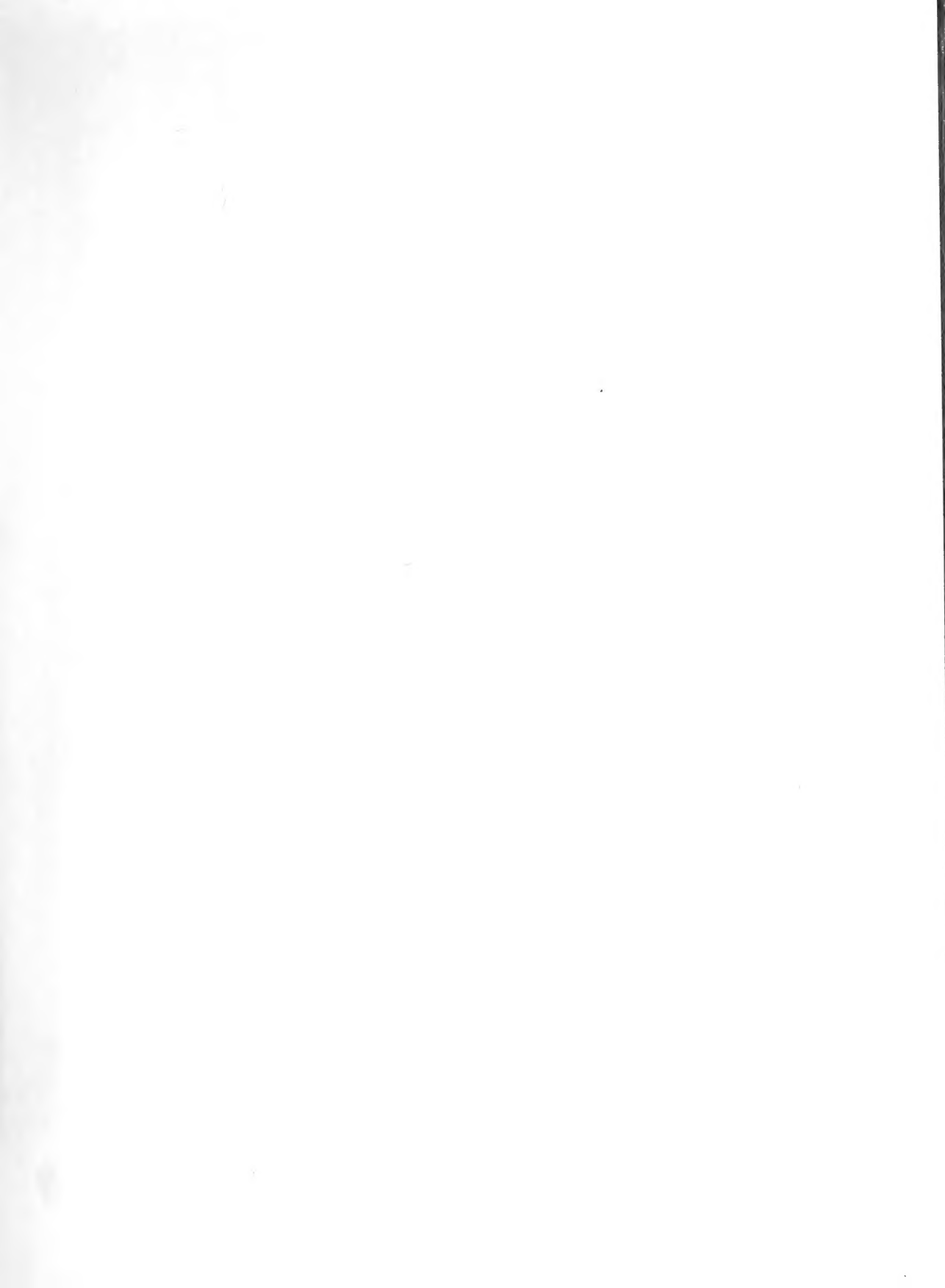
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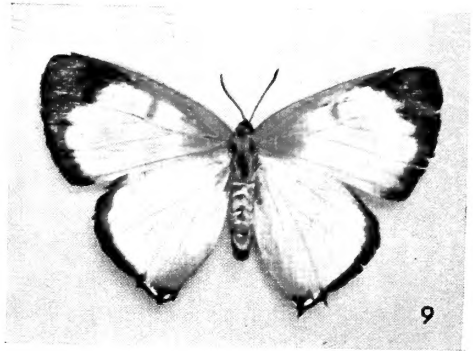
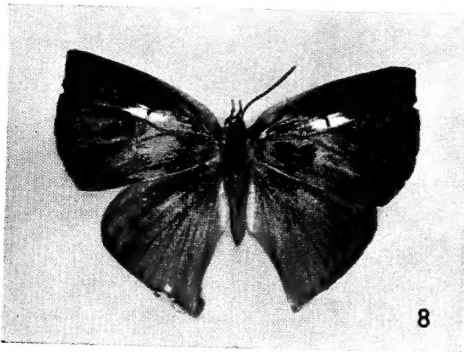
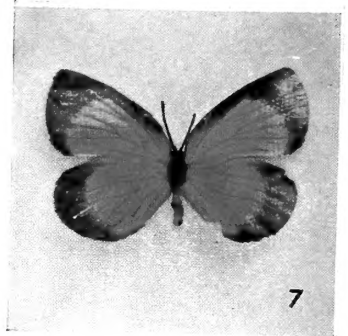
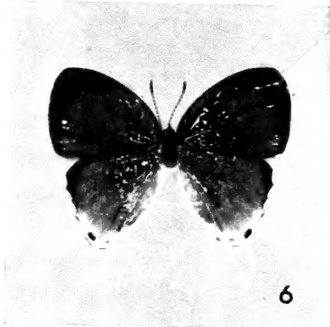
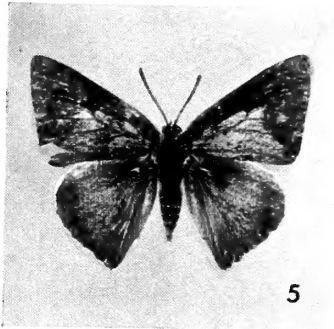
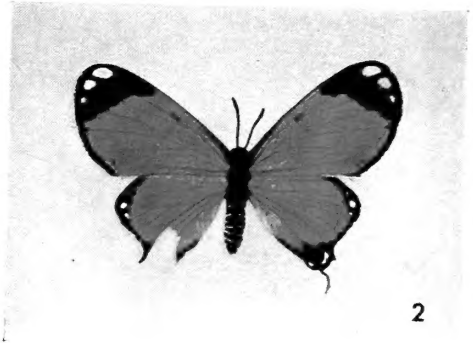
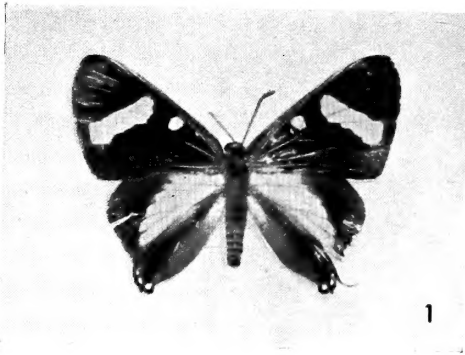


FIG. 1. *Pseudaletis spolia* Riley, ♂ holotype. FIG. 2. *Pseudaletis ugandae* Riley, ♀ holotype. FIG. 3. *Telipna Sheffieldi* Beth.-Baker, ♂. FIG. 4. *Telipna rothi* Smith, ♂. FIG. 5. *Egumbia ernesti* (Karsch), ♂. FIG. 6. *Oxylides gloveri* Hawker Smith, ♂ holotype. FIG. 7. *Tumerepedes flava* Beth.-Baker, ♀ holotype. FIG. 8. *Aslanga awa* H. H. Druce, ♀ holotype. FIG. 9. *Pseudaletis dardanella* Riley, ♀ holotype. All figures are natural size.



THE GENERA OF THE  
AFRICAN LYCAENIDAE  
(LEPIDOPTERA : RHOPALOCERA)



BY

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*Stf*

1 *Colour plate, 348 text-figs.*

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# THE GENERA OF AFRICAN LYCAENIDAE (LEPIDOPTERA : RHOPALOCERA)

By H. STEMPFFER

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## SYNOPSIS

The genera of African Lycaenidae are revised and figures of wing venation and genitalia are included for each genus. Lists of the species included in each genus are given. The major classification of the Lycaenidae occurring in the area is rationalized.

## INTRODUCTION

SINCE 1901, when Staudinger's *Catalog der palaearktischen Lepidopteren* was published, the classification of the palaeartic Lycaenidae has undergone profound modifications due to the importance now ascribed to the characters of the male genitalia. In order to establish a natural classification, we accord these characters, which we consider ancestral and of phylogenetic importance, precedence over external characters, which though much easier to appreciate, often present resemblances that are really due to fortuitous coincidence or convergent evolution.

In the very uniform subfamilies Theclinae and Lycaeninae, we have retained most of the genera included by Staudinger, but the omnibus genus *Lycaena*, in which species were arranged in a most arbitrary manner, has been broken up into the following subfamilies : Everinae, Lampidinae, Plebeiinae, Glaucopsychinae, Zizerinae and Lycaenopsinae. Most present day entomologists accept this classification and differ only as to the systematic rank, whether genus or subgenus, to be accorded to certain recently established groups of species.

We thus have a general concept of the palaeartic Lycaenidae which is in accordance with our present knowledge of systematics. The nearctic species have been classified on the same lines, but when we come to the Lycaenidae of the tropical regions, the situation is very different.

The only complete surveys that we have for the Ethiopian Lycaenidae are those of Aurivillius, firstly his *Rhopalocera Aethiopica* (1898), and secondly his account of the African Lycaenidae in Seitz, *Gross-Schmetterlinge der Erde* 13 (1914-25). In his first work Aurivillius based his classification solely on external characters, wing shape

and venation, shape of palpi, antennae, legs, etc. He divided the family into only two subfamilies, the Lipteninae peculiar to the Ethiopian regions, and the Lycaeninae. In his second work he retained his original classification with minor modifications and he intercalated the numerous species described between 1898 and the date of publication of the parts of Seitz's work. However, in the same period, Bethune Baker (1910, 1918, 1922 and 1924), published a number of monographs in which he made great use of genital characters. T. A. Chapman also published a Revision of the sub-family Zizeeriinae (*Trans. ent. Soc. Lond.* 1910 : 480 et seq.). Aurivillius (*in* Seitz, 1914-25) alluded to these monographs but refused to modify the basis of his classification on the plea that classification could not be based on the characters of one sex only. He still included in a very extensive genus, *Cupido* (with type-species *C. minimus* Fuessly, one of the Everinae), a motley crowd of species belonging to the Lampidinae, Plebeiinae, Zizeriinae, etc.

My disagreement with Aurivillius is not due to a difference of opinion concerning nomenclature and priority of description, it is a fundamental difference in concepts of classification. I think that classification should reflect phylogeny (as far as we can ascertain it), while Aurivillius contended that the best classification is that which enables an entomologist to determine easily and quickly any given specimen by the study of its external appearance.

However great our respect for the considerable achievement of Aurivillius, who was the first to bring some kind of order out of the chaos of the rich Ethiopian Fauna, I do not think that nowadays we can accept his method. I contend that we should attempt to do for the Ethiopian Fauna what has been done for the palaeartic Fauna, i.e. try to construct a natural classification.

Unfortunately the study of the Ethiopian Fauna lags far behind that of the palaeartic and nearctic faunas. Besides the excellent monographs of Bethune Baker and Chapman, which cover only a small part of the Ethiopian Fauna, we have only fragmentary studies consisting of faunistic lists and descriptions of new species. The male genitalia of many genera, especially in the subfamily Lipteninae, have never been studied or, at least, the results of such studies have never been published; up to now no comparison of the different genera has ever been attempted, neither has any attempt been made to group them into natural subfamilies.

It is this lack of a comprehensive outlook that I wish to try to remedy by making use of the knowledge available and adding to it such knowledge as I have acquired by personal observations. In the course of the last 25 years I have dissected and studied the male genitalia of many Ethiopian Lycaenidae, some from specimens sent me for determination, others from specimens kindly lent to me by Museums and private collectors. Altogether, I have examined more than 6,000 specimens belonging to 939 different species, out of a total of 1,263 known species. Previously I had examined some 500 palaeartic, nearctic and Indo-Malayan species; the knowledge thus acquired served me well in assessing relationship. Nevertheless I wish to make it clear that I have no intention to supersede the works of Aurivillius, which will still remain indispensable for the determination of species. My aim is quite different.

To facilitate the task of the reader, I have kept the genera in the same order as that followed by Aurivillius, although I do not always agree with him. I have reduced bibliographical references to old authors to a minimum since, as these can be found in the *Rhopalocera Aethiopica* of Aurivillius, their repetition would have overloaded the text to no purpose. Of modern authors I cite only the more comprehensive works which deal with a genus or an extensive regional fauna.

A few words are necessary about the descriptive text and the figures which make up the body of the present work. With regard to external characters I recapitulate only the more striking, truly generic features, but the condition of the fore tarsus of the male, the segments of which are generally fused, is always mentioned. As far as wing venation is concerned, I consider that a figure is more informative than a long description.

There follows a short description and schematic figure of the male genitalia of the type-species of the genus, drawn with the aid of a camera lucida.

With very few exceptions the genital organs are drawn in ventral aspect, spread out and, where possible, flattened. Such a drawing differs considerably from the view obtained when the genitalia are examined *in situ*, and the reader who is not familiar with the dissection of male genitalia may have some difficulty in visualizing them in their natural position. A lateral drawing of the whole genitalia mounted in depth would have many disadvantages, such as lack of clarity and overlapping and foreshortening of some of the organs. Although I include some such figures, I have

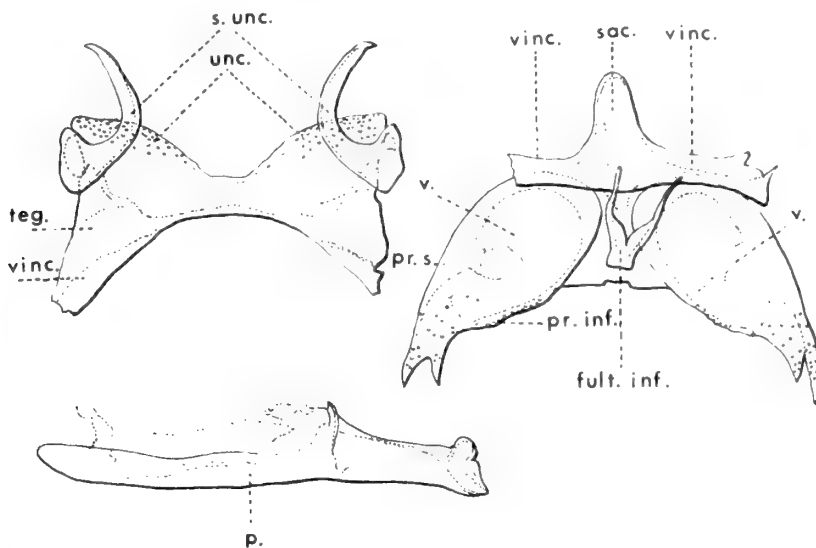


FIG. 1. *Anthene definita* Butler, ♂ genitalia. unc., uncus = cheeks of Bethune Baker ; s. unc., subunci = falces of Bethune Baker (these are not the same as the socii which are found in other groups of Lepidoptera) ; teg., tegumen ; vinc., vinculum ; sac., saccus ; fult. inf., lower fulture = furca of Bethune Baker ; v., valves = harpagones of Bethune Baker ; pr. s., upper process of the valves ; pr. inf., lower process of the valves ; p., penis = aedeagus of Bethune Baker.

preferred to give drawings of the organs separately. Although the making of such mounts entails longer and more delicate operations, it is worth while because it gives a better idea of each organ and shows up the specific characters. Where there were imperfections in my preparation, I have reproduced them in my drawings so that my figures are faithful copies and not improvements on the original. To avoid confusion I have not drawn any hairs, but I have shown their points of insertion.

The terminology of the genital parts employed in the present work differs slightly from that which I used in some of my previous publications. In these, I followed Bethune Baker, and employed the term "tegumen" for the whole of the dorsal parts. I think now that it is more reasonable to call the part that corresponds to the tenth tergite "the uncus", and to confine the term "tegumen" to the derivative of the ninth tergite, even though the uncus, often closely fused to the tegumen, appears merely as a thickening on its posterior margin, or only consists of the two small lateral lobes, which Bethune Baker called "cheeks". For the part supporting the penis which is usually fused to the base of the valves, I employ the term "lower fultura", a more general term than "furca", which is a special form of the lower fultura found in the Plebeinae.

The terminology of the parts, as used in the present work, is indicated in figures of *Anthene definita* Butler (Text-fig. 1) and *Lepidochrysopt victoriae* Karsch (Text-fig. 2).

In most cases the description of the genitalia is followed by the comparison of the genitalia of the type-species with those of other species in the genus, in an attempt to establish whether the nominal genus under review is a natural taxonomic unit, or merely an artificial heterogeneous collection of species. But as I have seldom been able to examine all the species included in any genus (see Lists of Species) I have

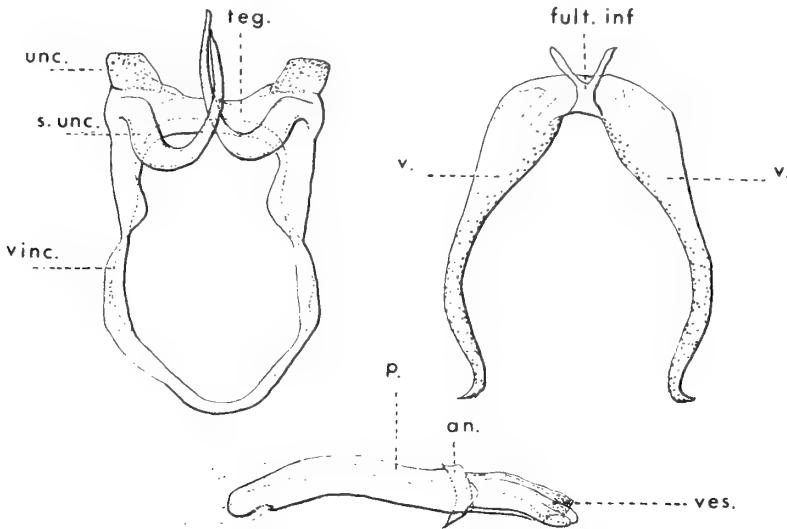


FIG. 2. *Lepidochrysopt victoriae* Karsch, ♂ genitalia, abbreviations as in Text-fig. 1, an., anellus; ves., vesica.

generally refrained from making new subdivisions or, in particular, introducing new generic names, which might add to the existing confusion.

At this point I have added brief indications of what is known of the life histories of the species referred to the genus. This is the only part of the present work which is pure compilation, for I have no personal knowledge of the early stages of any of the species concerned. It shows how strikingly ignorant we are in this respect.

Finally, there is appended to the account of each genus an alphabetical list of all the species, subspecies, varieties etc., referred to it, and their synonyms; those of which I have myself examined the male genitalia are marked with an asterisk, and I have been at pains to give references to descriptions of these organs published elsewhere by other authors. The alphabetical arrangement has been deliberately chosen because, in my opinion, the gaps in our knowledge are still so great as to render the production of a satisfactory natural systematic arrangement impossible. I am fully aware of the imperfections and lacunae of this work. It is not exactly attractive; the employment of a uniform order in the enumeration of characters and the necessarily concise style inevitably tend to produce a dry, monotonous text. My essay is more critical than constructive, and is meant to show that the present classification rests on imperfect bases. I have been content in the end to suggest a few new groupings of species and genera, nothing more, because to build up a sound system of classification, it would be necessary to examine all the species that exist, and I have not been able even to study all those that are known. It must be remembered that if it is comparatively easy to obtain sufficient material for the study of a limited and well known fauna, such as that of Europe, it is practically impossible to examine within a reasonable time all the Ethiopian species, many of which are represented by single specimens distributed in Museums and private collections all over the world. This will be the work of many authors specializing on single genera, or on limited groups of genera at a time.

Incomplete as this work is bound to be, I hope that it may be of some use, if only to incite other entomologists to further studies. I should not have dared to undertake it, had it not been for the friendly encouragement of Mr. N. D. Riley, formerly Keeper of Entomology, in the British Museum (Natural History), whose advice and help has always been available to me, and who made himself responsible for the final revision of the English text and for elucidating various nomenclatural obscurities etc. I also wish to thank the Trustees of the British Museum (Natural History) for their kindness in publishing this work.

I owe sincere thanks also to all the entomologists, both officials, and amateurs, who have sent me material for study, first and foremost Mr. T. H. E. Jackson of Kitale, Kenya, who sent me hundreds of specimens; further Mr. B. D. Barnes of Umtali; Mr. N. H. Bennett, Tring; Monsieur L. Berger, of the Musée Royal de l'Afrique central, Tervuren; Mr. R. H. Carcasson, Coryndon Museum, Nairobi; the late G. C. Clark, Port Elizabeth; Mr. H. Cookson, Umtali; Mr. C. G. C. Dickson, Cape Town; Dr. M. Fontaine, Brussels; Dr. W. Forster, Zoologische Sammlung des Bayerischen Staates, Munich; Dr. H. J. Hannemann, Berlin; Father Th. Massen, missionary in Ghana; Mr. K. M. Pennington, Balgowan, Natal; Dr. E. C. G. Pinhey, Bulawayo; Dr. Patrick Roche, London; Monsieur P. Rougeot,

Paris ; Dr. van Someren, Ngong, Kenya ; Dr. van Son, Pretoria ; and Mr. G. E. Tite, Tring.

DIAGNOSES OF THE GENERA, WITH LISTS OF SPECIES

Genus *ALAENA* Boisduval

*Alaena* Boisduval, 1847, *Voyage Delegorgue* 2 : 591 ; Aurivillius, 1898 : 254 ; 1919-25 : 298 ; Desmond Murray, 1923 : 47 ; Pinhey, 1949 : 96, pl. 15, figs 1-3 ; Swanepoel, 1953 : 182, 184, pl. 8, figs 38-41. Type-species : *Alaena amazoula* Boisduval, by monotypy.

*Male fore leg* stout, very pilose, especially on the tibia ; tarsus short, not distinctly segmented, strongly spinose ventrally, terminal claws absent ; ♀ fore leg fully developed, less hairy than that of ♂.

*Wing venation* (Text-fig. 229). There is a short but distinct precostal vein at the base of the hind wing.

*Male genitalia* (Text-fig. 3). Uncus composed of two rounded lobes, densely covered with short hairs and broadly fused to a broad tegumen ; subunci robust, curved near the base and ending in a hook ; vinculum narrow, incomplete ventrally ; the oblong valves are directly fused to the extremities of the tergite and are partially joined together on the lower edge, whilst their upper edges are bridged by a narrow membranous strip, thus forming a sheath for the strong, subcylindrical penis, which is somewhat broadened just before its truncated apex ; there are a few short hairs on the distal portion of the valves.

The male genitalia of other species, as far as they are known, closely resemble those of *A. amazoula* ; they differ only slightly in the shape of the valves. The genus seems homogeneous, both in structure and in general appearance. The species of *Alaena* are somewhat small with oblong, rounded wings, yellowish or black in colour, spotted with white. They remind one a little of the Acraeinae, in which family they were originally included.

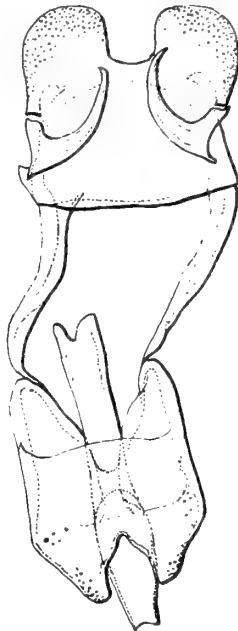


FIG. 3. *Alaena amazoula* Boisduval, ♂ genitalia.



LIST OF SPECIES OF *Alaena*

- Alaena amazoula amazoula* Boisduval, 1847. Fig. Trimen, 1862.  
*Alaena amazoula congoana* Aurivillius, 1914.  
*Alaena amazoula nyasana* Hawker Smith, 1933, *Stylops* 2 : 1.  
*Alaena aurantiaca* see *interposita*.  
*Alaena bicolora* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) 14 : 130.  
*Alaena caissa* Rebel & Rogenhofer, 1894. Fig. Aurivillius in Seitz, 1914-25.  
*Alaena caissa kagera* Talbot, 1935, *Entomologists' mon. Mag.* 71 : 69, fig.  
*Alaena ferrulineata* Hawker Smith, 1933, *Stylops* 2 : 2.  
*Alaena interposita interposita* Butler, 1883.  
*Alaena interposita hauttecoeuri* Oberthur, 1888.  
     *aurantiaca* Butler, 1895.  
*Alaena johanna* E. M. Sharpe, 1890. Fig. Sharpe, 1894.  
*Alaena johanna tsavoa* Jackson, 1965, *Ann. Mag. nat. Hist.* (13) 8 : 527, fig.  
*Alaena kiellandi* Carcasson, 1965, *J. E. Afr. n. H. Soc.* 25 : 132, figs.  
*Alaena lamborni* Gifford, 1965, *Butt. Malawi* : 41, figs.  
*Alaena maculata maculata* Hawker Smith, 1933, *Stylops* 2 : 3.  
*Alaena maculata ochrea* Hawker Smith, 1933, *Stylops* 2 : 3.  
*Alaena madibirensis* Wichgraf, 1921, *Int. ent. Z.* 14 : 195.  
*Alaena major*, see *nyassae*.  
\**Alaena margaritacea* Eltringham, 1929, *Trans. ent. Soc. Lond.* 77 : 492. Fig. Murray, 1935.  
*Alaena mulsa*, see *picata*.  
*Alaena ngonga* Jackson, 1965, l.c. : 521, fig.  
\**Alaena nyassae nyassae* Hewitson, 1877. Fig. Trimen, 1894 = *major* Oberthur, 1894.  
*Alaena nyassae marmorata* Hawker Smith, 1933, *Stylops* 2 : 1.  
*Alaena nyassae* ab. *ochracea* Butler, 1893.  
\**Alaena oberthuri* Aurivillius, 1898. Fig. Aurivillius in Seitz, 1914-25.  
\**Alaena picata picata* E. M. Sharpe, 1896. Fig. Aurivillius in Seitz, 1914-25.  
     *mulsa* Thieme, 1904 ; *rollei* Suffert, 1904.  
*Alaena picata interrupta* Hawker Smith, 1933, *Stylops* 2 : 2.  
*Alaena picata connectens* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 69.  
*Alaena reticulata* Butler, 1896. Fig. Butler, 1897.  
*Alaena rollei* see *picata*.  
\**Alaena subrubra* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) 16 : 186.  
\**Alaena unimaculata* Hawker Smith, 1926, *Revue Zool. Bot. afr.* 14 : 237.

Genus **TELIPNA** Aurivillius

*Telipna* Aurivillius, 1895, *Ent. Tidskr.* 16 : 198 ; 1898 : 256 ; 1914-25 : 300. Type-species : *Liptena acraea* Westwood, 1851 ; 1959 : I.C.Z.N. Opinion 566.

This type-designation, made under the plenary powers of the International Commission for Zoological Nomenclature, is justified by the facts, which are clearly

set out in the *Opinion* quoted above and in the application submitted to the Commission by Francis Hemming and myself. The strict application of the Rules would have resulted in great confusion in the generic names of some 150 species of Lycaenidae, would have upset usages which had been customary since 1898, and served no useful purpose.

*Frons* and palpi bearing closely adpressed hair-scales. *Eyes* smooth, palpi short, third segment much reduced, button-shaped. *Thorax* laterally compressed, abdomen rather long. *Legs* black, white-ringed; ♂ fore tarsi unsegmented, without terminal claws.

*Wing venation* (Text-fig. 230). A short precostal vein is present at the base of the hind wings.

*Male genitalia* (Text-fig. 4). It is difficult to give a clear description of the ♂ genitalia of *T. acraea*; only by carrying out an actual dissection can a satisfactory idea be obtained. Bethune Baker's description (1914: 319, pl. 59, fig. 12) is very brief and his photograph showing the organs in profile, *in situ*, is rather confusing. I have chosen to figure the genitalia with the different parts separated, in ventral aspect, and spread out as much as possible.

Uncus bilobed, without clearly articulated subunci, but with lateral expansions fused to the very large tegumen. Vinculum broad; on the tergite-sternite suture there are two supplementary processes of irregular outline enclosing the penis and resembling a secondary pair of reduced valves; the true valves broadly fused basally to the vinculum, the upper process ending in a pair of rounded lobes, the much shorter lower process having a similar rounded end. Penis uniformly tapering, ending in a truncated cone. Uncus and distal half of valves hairy.

The male genitalia of all the species of *Telipna* examined are very uniform, except for *T. carnuta* which really should be excluded from the genus. The venation, too, of this species is slightly different; on the fore wing vein 7 arises slightly before the upper angle of the cell; on the hind wing vein 7 is stalked with vein 6, separating from it very near its origin.

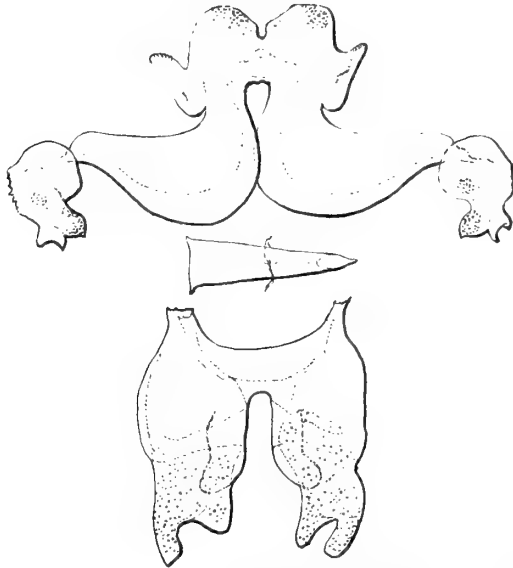


FIG. 4. *Telipna acraea semirufa* Smith & Kirby, ♂ genitalia.

The male genitalia of *T. carnuta* (Text-fig. 5), as Bethune Baker (1914 : 319) has already pointed out, are far removed from those of the true *Telipnas*. Tegumen and subunci similar to these parts in species of *Alaena* ; valves directly united to the tergal portion of the vinculum, of which the sternal part is lacking ; the valves, to use Bethune Baker's expression, are shaped like a ham in which the knuckle end is deeply divided at its extremity ; they are joined together close to their bases by a broad chitinous band at their upper edges, and by a narrower band at their lower edges, the latter band bearing also a long tapering process which is directed caudad. Penis robust, slightly curved, tapering uniformly to the obliquely truncate apex ; vesica armed with strong spines.

The early stages of *T. consanguinea* Rebel and *T. sanguinea depuncta* Talbot have been noted by T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 205). The larvae feed on lichens and mosses on the bark of trees.

LIST OF SPECIES OF *Telipna*

- \**Telipna acraea acraea* (Doubleday & Hewitson), 1852.
- Telipna acraea nigra* Suffert, 1904, *Dt. ent. Z., Iris* **17** : 42.
- \**Telipna acraeoides acraeoides* (Smith & Kirby), 1890. Fig. Aurivillius in Seitz, 1914-25. Fig. Smith & Kirby, 1887, as *sanguinea* Plötz, figs 1, 2 only. Fig. Hewitson, 1866, *Exot. Lep.* III, fig. 12, as *acraea* Doubleday & Hewitson, nec Westwood, 1852.
- Telipna acraeoides laplumei* Devos, 1919, *Revue zool. afr.* **6** : 62.
- Telipna actinotina* Lathy, 1903, *Trans. ent. Soc. Lond.* **1903** : 194, fig.
- \**Telipna angustifascia angustifascia* Joicey & Talbot, 1921, *Bull. Hill Mus. Willey* **1** : 77, fig.
- \**Telipna angustifascia neavei* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 316.
- Telipna anneckeii*, see *sanguinea*.



FIG. 5. *Telipna carnuta* Hewitson, ♂ genitalia.

- Telipna atrinervis* Hulstaert, 1924, *Revue zool. afr.* **12** : 113.
- \**Telipna aurivillii* Rebel, 1914, *Annln naturh. Mus. Wien* **28** : 262, fig.
- \**Telipna bimacula bimacula* (Plötz), 1880, Fig. Aurivillius in Seitz, 1914-25.  
*fervida* Smith & Kirby, 1890.
- Telipna bimacula echo* (Smith & Kirby), 1890.
- \**Telipna bimacula semirufa* (Smith & Kirby), 1889.
- \**Telipna bimacula albofasciata* Aurivillius, 1910.
- Telipna bimacula* f. *nigrita* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 70.
- \**Telipna carnuta carnuta* (Hewitson), 1873. Fig. Smith & Kirby, 1893.
- Telipna carnuta parva* (Kirby), 1887. Fig. Smith & Kirby, 1888.
- Telipna citrimacula* Schultze, 1916, *Arch. Naturgesch.* **81** (A) Heft 12 : 141.
- \**Telipna consanguinea* Rebel, 1914, *Annln Naturh. Mus. Wien* **28** : 262, fig.
- Telipna consanguinea* ab. *extincta* Schultze, 1923, *Ergeb. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1150, fig.
- \**Telipna erica erica* Suffert, 1904, *Dt. ent. Z. Iris* **17** : 41. Fig. Aurivillius in Seitz, 1914-25.
- \**Telipna erica ugandae* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 388.
- Telipna exsuperia*, see *hollandi*.
- Telipna fervida*, see *bimacula*.
- \**Telipna hollandi* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 80, fig.  
*exsuperia* Hulstaert, 1924.
- Telipna ja* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 388.
- Telipna kamitugensis* Dufrane, 1945, *Bull. Annl. Soc. R. ent. Belg.* **81** : 114.
- \**Telipna katangae* Stempffer, 1961 : 9, fig.
- Telipna mariae* Dufrane, 1945, *Bull. Annl. Soc. R. ent. Belg.* **81** : 112.
- Telipna medjensis* Holland, 1920, *Bull. Am. Mus. nat. Hist.* **43** : 214, fig.
- \**Telipna nyanza* Neave, 1904, *Novit. zool.* **11** : 335, fig.
- \**Telipna plagiata* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 79, fig.
- Telipna rothi* (Smith), 1898.
- Telipna rothioides* Holland, 1920, *Bull. Am. Mus. nat. Hist.* **43** : 214, fig.
- Telipna rufilla* (Smith), 1901.
- Telipna ruspinooides* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1151, fig.
- \**Telipna sanguinea sanguinea* (Plötz), 1880. Fig. Smith & Kirby, 1887 (figs 3, 4 only)  
*anneckeii* Dewitz, 1886.
- Telipna sanguinea bistrigatus* Aurivillius, 1925, *Ark. Zool.* **17A**, 32 : 7.
- \**Telipna sanguinea depuncta* Talbot, 1937, *Trans. R. ent. Soc. Lond.* **86** : 59.
- Telipna sheffieldi* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 387.
- Telipna subhyalina* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 78, fig.
- Telipna sulphitia* Hulstaert, 1924, *Revue zool. afr.* **12** : 114.
- \**Telipna transverstigma* H. H. Druce, 1910, *Proc. zool. Soc. Lond.* **1910** : 356, fig.
- Telipna venanigra* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 387.
- Telipna villiersi* Stempffer, 1965, *Bull. Inst. fr. Afr. noire* **27** : 1450, figs.

Genus *COOKSONIA* H. H. Druce

*Cooksonia* H. H. Druce, 1905, *Trans. ent. Soc. Lond.* **1905** : 256 ; Aurivillius, 1914-1925 : 302.  
 Type-species : *Cooksonia trimeni* H. H. Druce, 1905, by original designation.  
*Sheffieldia* H. H. Druce, 1912, *Entomologist's mon. Mag.* **48** : 128 ; Talbot, 1935, *Entomologist's mon. Mag.* **71** : 202, synonymy. Type-species : *Sheffieldia neavei* H. H. Druce, by monotypy.

Eyes smooth ; palpi of medium length, erect, clothed with adpressed black scales, third segment very short ; antennae slender, half as long as costa ; club well differentiated, flattened, spatulate.

*Wing venation* (Text-fig. 231).

The only known specimen of *C. trimeni* is a ♀, so I have been unable to examine the ♂ genitalia of the type-species ; on the other hand, I have examined the ♂ genitalia of *C. neavei* H. Druce and *C. aliciae* Talbot.

In *C. neavei* the ♂ fore legs are short, almost glabrous, tibia a trifle shorter than the femur, tarsus unsegmented and bearing fine spines below. The venation (Text-fig. 232) of *C. neavei* differs slightly from that of *C. trimeni* inasmuch as veins 5 and 6 of the fore wing have a short common stem which arises from the upper angle of the cell, but this difference is not constant, for I have seen in the British Museum a ♂ specimen of *C. neavei* in which the veins arise as in *C. trimeni*. The synonymy given by Talbot, viz : *Cooksonia* = *Sheffieldia*, is undeniable.

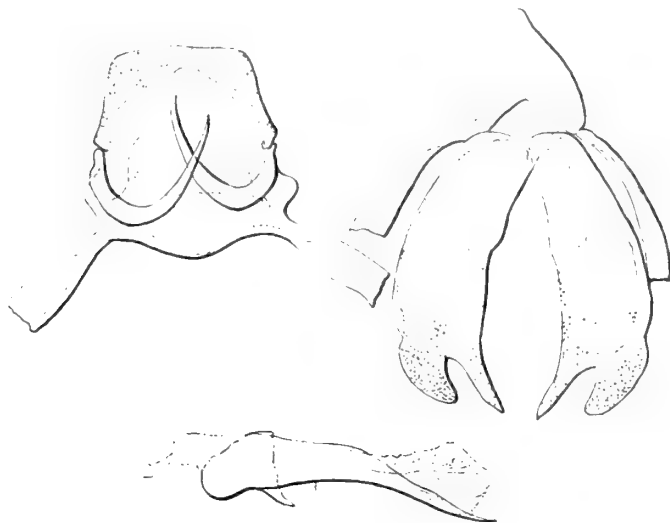


FIG. 6. *Cooksonia neavei* (Druce), ♂ genitalia.

*Male genitalia* of *C. neavei* (Text-fig. 6) : uncus crescentic with an almost straight anterior margin ; subunci long, curved, tapering regularly ; tegumen triangular, separated from the uncus by a membrane which is translucent under the microscope ; vinculum fairly wide, saccus triangular, turned towards the apex of the abdomen and not towards the eighth segment ; valves oblong, the two processes separate at the apex, the apex of the upper process rounded, that of the lower one more pointed ; penis elongate, ending in a sharp, slightly curved point ; uncus and apices of valves densely pilose.

In *C. aliciae* the ♂ fore legs are like those of *C. neavei*, and the male genitalia (Text-fig. 7) almost identical with those of *C. neavei*, except that the lateral angles of the uncus are more rounded.

The male genitalia of these two species are of the commonplace pattern, totally different from that found in species of *Telipna* and *Pentila*, in which the genitalia are highly specialized. There is, therefore, no good reason for leaving the genus *Cooksonia* in the company of the above two genera, the only character it has in common with them being the presence of a precostal vein in the hind wing, a character which, incidentally, was not mentioned in the description of the genus but which nevertheless is present in the three known species.

The chrysalis of *C. aliciae* has been described and figured by Talbot (1935 : 204, pl. V, fig. 3).

#### LIST OF SPECIES OF *Cooksonia*

\**Cooksonia aliciae* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 203, fig.

\**Cooksonia neavei* (H. H. Druce), 1912.

*Cooksonia trimeni trimeni* H. H. Druce, 1905.

*Cooksonia trimeni terpsichore* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 204.

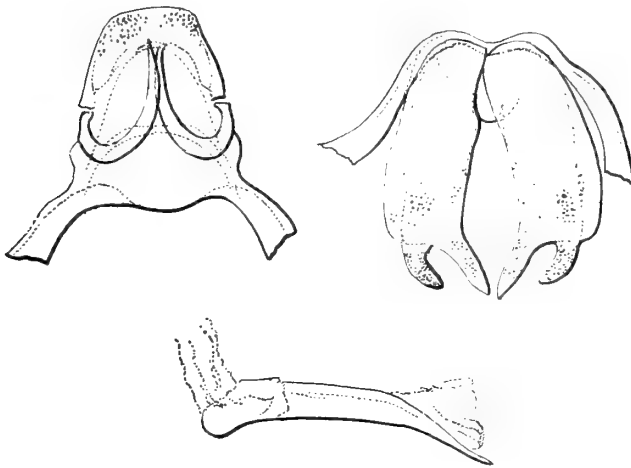


FIG. 7. *Cooksonia aliciae* Talbot, ♂ genitalia.

Genus *PENTILA* Westwood

*Pentila* Westwood, 1851, *Genera Diurnal Lepidoptera*, pl. 76 ; Aurivillius, 1898 : 258, 1914 : 303 ; Murray, 1935 : 52 ; Swanepoel, 1953 : 191. Type-species : *Tingra tropicalis* Boisduval, 1847 ; 1935 : I.C.Z.N. Opinion 566.

Head small, vertex bearing adpressed hairs ; eyes large and naked ; palpi very small and very short, underside of 1st and 2nd segments bearing long scales, last segment reduced, button-shaped ; antennae short, fairly robust, with a very distinct club which is an elongated oval in



FIG. 8. *Pentila tropicalis* (Boisduval), ♂ genitalia.



FIG. 9. *Pentila tachyroides* Dewitz, ♂ genitalia.

shape ; *thorax* short and slender ; *abdomen* long, swollen in its apical portion ; legs short, robust, bearing a few scales but no hairs, tarsi spinose ventrally ; ♂ fore leg with the tibia finely spinose ventrally, tarsus short, unsegmented and ventrally spinose.

*Wing venation* (Text-fig. 233). The cell is very long in both wings ; hind wing with a short precostal vein at the base.

*Male genitalia* (Text-figs 8, 9). The genitalia of the ♂ are asymmetric and highly specialized, but very constant in form throughout the genus. In order to appreciate their configuration thoroughly it is necessary to separate the dorsal and ventral portions and to arrange the parts separately flat on a slide ; a preparation showing the parts *in situ*, in profile, is only confusing and of no use for the recognition of specific characters. Uncus trifurcate, the median process much the longest, the two lateral lobes asymmetric, curved inwards ; tegumen very large, hood-shaped, also slightly asymmetric ; gnathos strongly chitinized and trumpet-shaped in lateral aspect ; sternite prolonged towards the eighth segment by two rounded expansions and ending in an asymmetric feebly chitinized portion towards the apex of the abdomen ; there are no true articulated valves but five asymmetric expansions of the vinculum, the shapes of which provide excellent specific characters ; penis very long and cylindrical, slightly incurved towards the apex ; the fully eversible vesica was found everted in all specimens examined, producing the appearance of a flail.

*Female genitalia* (Text-fig. 10). The ♀ genitalia are also very specialized. The anal papillae are covered with fine silky hair and are devoid of posterior apophyses. The wide ostium bursae opens on the seventh sternite and is easily visible to the naked eye, which enables the sex to be recognized with ease. The ductus bursae is at first strongly chitinized, and the sclerotized portion, which makes a swelling on the underside of the abdomen, takes an even curve that seems to correspond with the curve of the terminal part of the penis ; the membranous portion of the duct is folded back at an acute angle towards the apex of the abdomen. In this way one can understand the peculiar situation imposed on the vesica at the time of copulation, a situation which is retained after copulation and is found on dissecting the males.

I have been able to examine the male genitalia of all known species of *Pentila* except *P. umbra* Holland. As indicated above, they are all of the same general type as *tropicalis*, yet they provide good specific characters. The genus, though numerous in species, is perfectly homogeneous.

Nothing is known of the early stages of any species, which is surprising, for many of the species are abundant in their habitats and they are widely distributed geographically.

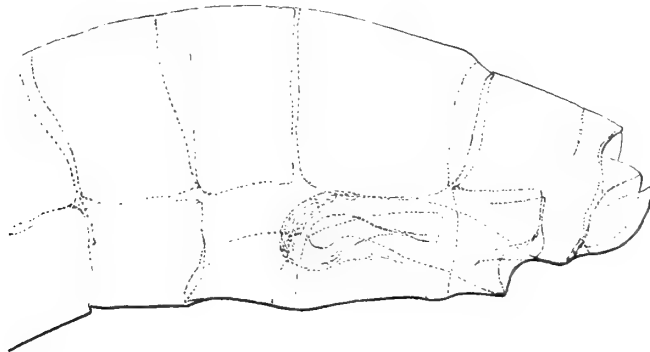


FIG. 10. *Pentila tachyroides* f. *roidesta* Suffert, ♀ genitalia.



LIST OF SPECIES OF *Pentila*

- Pentila abraxas abraxas* (Doubleday & Hewitson), 1852. Fig. genitalia, Stempffer & Bennett, 1961 : 1181.  
*tripunctata* Aurivillius, 1895.
- Pentila abraxas* ab. *affixa* Schulze, see *abraxas pardalena*.
- \**Pentila abraxas maculata* (Kirby), 1887. Fig. Smith & Kirby, 1888. Fig. genitalia, Stempffer & Bennett, 1961 : 1182.  
*hedwiga* Suffert, 1904 ; *telesippe* and *elpinice* Grünberg, 1910.
- \**Pentila abraxas pardalena* H. H. Druce, 1910. Fig. genitalia, Stempffer & Bennett, 1961 : 1185.  
*abraxas* ab. *affixa* Schultz, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1157.
- \**Pentila abraxas phidia* Hewitson, 1874. Fig. Smith & Kirby, 1893. Fig. genitalia, Stempffer & Bennett, 1961 : 1184.  
*nnu* (Karsch), 1893.
- \**Pentila abraxas subochracea* Hawker Smith, 1933, *Stylops* 2 : 4. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1186.
- \**Pentila alba* Dewitz, 1886. Fig. genitalia, Stempffer & Bennett, 1961 : 1202.
- \**Pentila amenaida* Hewitson, 1873. Fig. genitalia, Stempffer & Bennett, 1961 : 1130.
- \**Pentila amenaidoides* (Holland), 1892. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1138.
- \**Pentila auga auga* Karsch, 1895. Fig. H. H. Druce, 1910, *Ill. African Lycaenidae*. Fig. genitalia, Stempffer & Bennett, 1961 : 1198.  
*Pentila auga congoensis* Joicey & Talbot, see *cloetensi catauga*.
- Pentila bertha* (Smith & Kirby), see *nero*.
- \**Pentila bitje* H. H. Druce, 1910. Fig. genitalia, Stempffer & Bennett, 1961 : 1201.
- \**Pentila camerunica* Stempffer & Bennett, 1961 : 1196, fig. and fig. genitalia.
- \**Pentila carcassoni* Stempffer & Bennett, 1961 : 1168, fig. and fig. genitalia.
- \**Pentila christina* Suffert, 1904. Fig. H. H. Druce, 1910, *Ill. African Lycaenidae*, pl. 2. Fig. genitalia, Stempffer & Bennett, 1961 : 1195.
- \**Pentila cloetensi cloetensi* Aurivillius, 1897. Fig. Holland, 1920, *Bull. Am. Mus. nat. Hist.* 43. Fig. genitalia, Stempffer & Bennett, 1961 : 1188.  
*elfrieda* Suffert, 1904.
- \**Pentila cloetensis albida* Hawker Smith, 1933, *Stylops* 2 : 4. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1192.
- \**Pentila cloetensis aspasia* Grünberg, 1910. Fig. and fig. genitalia, Stempffer & Bennett, 1961.
- \**Pentila cloetensi* f. *elfriedana* Strand, 1918, *Int. ent. Z.* 12 : 101.  
*Pentila cloetensi* f. *latefascia* Dufrane, 1953, *Bull. Annl. Soc. R. ent. Belg.* 89 : 47.
- \**Pentila cloetensi catauga* Rebel, 1914, *Annl. naturh. Mus. Wien* 28 : 263, pl. 22. Fig. genitalia, Stempffer & Bennett, 1961 : 1189.  
*augo congoensis* Joicey & Talbot, 1921.

- \**Pentila cloetensi lucayensis* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1158. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1193.
- \**Pentila cloetensi uelensis* Stempffer & Bennett, 1961 : 1190, fig. and fig. genitalia.
- \**Pentila cloetensi condamini* Stempffer, 1963, *Bull. Inst. fr. Afr. noire* 25 : 954, fig. and fig. genitalia.
- Pentila elfrieda* Suffert, see *cloetensi*.
- Pentila elpinice* Grünberg, see *abraxas maculata*.
- \**Pentila fallax* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) 16 : 187. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1148.
- \**Pentila fidonioides* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1155. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1133.
- \**Pentila glagoessa* (Holland), 1893. Fig. genitalia, Stempffer & Bennett, 1961 : 1203.
- Pentila hedwiga* Suffert, see *abraxas maculata*.
- \**Pentila hewitsoni hewitsoni* (Smith & Kirby), 1887. Fig. Aurivillius in Seitz, 1914-25. Fig. genitalia, Stempffer & Bennett, 1961 : 1199.
- Pentila hewitsoni* f. *leura* (Kirby), 1890. Fig. Smith & Kirby, 1891.
- Pentila hewitsoni limbata* (Holland), 1893.
- \**Pentila inconspicua* H. H. Druce, 1910. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1162.
- \**Pentila landbecki* Stempffer & Bennett, 1961 : 1165, fig. and fig. genitalia.
- Pentila lavinia* (Kirby), see *torrida*.
- Pentila lunaris* (Weymer), see *preussi*.
- \**Pentila mesia* Hulstaert, 1924, *Revue zool. afr.* 12 : 115. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1136.
- Pentila mylothrina* Butler, see *tachyroides*.
- Pentila nero* (Smith & Kirby), 1894. Fig. genitalia, Stempffer & Bennett, 1961 : 1132.
- bertha* (Smith & Kirby), 1894.
- \**Pentila nigeriana* Stempffer & Bennett, 1961 : 1158, fig. and fig. genitalia.
- Pentila nunu* (Karsch), see *abraxas phidia*.
- \**Pentila nyassana nyassana* Aurivillius, 1898. Fig. genitalia, Stempffer & Bennett, 1961 : 1113.
- \**Pentila nyassana alberta* Hulstaert, 1924, *Revue zool. afr.* 12 : 116. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1123.
- Pentila nyassana amenaidena* Strand, 1911.
- \**Pentila nyassana benguellana* Stempffer & Bennett, 1961 : 1116, fig. and fig. genitalia.
- \**Pentila nyassana clarensis* Neave, 1903. Fig. Holland, 1920, *Bull. Am. Mus. nat. Hist.* 43. Fig. genitalia, Stempffer & Bennett, 1961 : 1120.
- Pentila nyassana dama* Suffert, 1904.
- \**Pentila nyassana elisabetha* Hulstaert, 1924, *Revue zool. afr.* 12 : 116. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1121.

- Pentila nyassana* f. *nigribasis* Hulstaert, 1924, *Revue zool. afr.* **12** : 116.
- \**Pentila nyassana leopardina* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1154, fig. Fig. genitalia, Stempffer & Bennett, 1961 : 1126.
- \**Pentila nyassana multiplagata* Bethune, Baker 1908. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1125.
- \**Pentila nyassana obsoleta* Hawker Smith, 1933, *Stylops* **2** : 3. Fig. Stevenson, 1940, *J. ent. Soc. sth. Afr.* **3**.
- Pentila nyassana* f. *cataractae* Stevenson, 1940, l.c. : 101, fig.
- \**Pentila nyassana pauli* Staudinger, 1888. Fig. Aurivillius, 1898. Fig. genitalia, Stempffer & Bennett, 1961 : 1127.
- \**Pentila nyassana* f. *radiata* Lathy, 1903.
- Pentila nyassana* f. *multipunctata* Lathy, 1903.
- \**Pentila nyassana ras* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 70. Fig. genitalia, Stempffer & Bennett, 1961 : 1124.
- \**Pentila occidentaliu* *occidentaliu* Aurivillius, 1898. Fig. genitalia, Stempffer & Bennett, 1961 : 1156.
- Pentila occidentaliu* f. *congoana*, Strand, see *occidentaliu* f. *immaculata* Suffert.
- \**Pentila occidentaliu gabunica* Stempffer & Bennett, 1961 : 1157, fig. and fig. genitalia.
- Pentila occidentaliu* f. *immaculata* Suffert, 1904.  
*occidentaliu* f. *congoana* Strand, 1918.
- Pentila parapetreia* ab. *derema* Strand, see *rogersi parapetreia*
- Pentila paucipuncta* (Kirby), see *preussi*.
- \**Pentila petreia* Hewitson, 1874. Fig. Smith & Kirby, 1889. Fig. genitalia, Stempffer & Bennett, 1961 : 1170.  
*tripunctata* (H. H. Druce), 1888.
- \**Pentila petreoides* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) **16** : 187. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1146.
- \**Pentila picena picena* Hewitson, 1874. Fig. Smith & Kirby, 1893. Fig. genitalia, Stempffer & Bennett, 1961 : 1177.
- \**Pentila picena catori* Bethune Baker, 1906. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1179.
- \**Pentila picena cydaria* (Smith), 1898. Fig. genitalia, Stempffer & Bennett, 1961 : 1178.
- \**Pentila preussi preussi* Staudinger, 1888. Fig. Smith & Kirby, 1891. Fig. genitalia, Stempffer & Bennett, 1961 : 1171.  
*paucipuncta* (Kirby), 1890, and *lunaris* Weymer, 1892.
- \**Pentila preussi faye*i Stempffer, 1963, *Bull. Inst. fr. Afr. noire* **25** : 957, fig.
- \**Pentila pseudoro*tha Stempffer & Bennett, 1961 : 1142, fig. and fig. genitalia.
- \**Pentila rogersi rogersi* (H. H. Druce), 1907. Fig. genitalia, Stempffer, 1953, *Annl's Mus. R. Congo belge* **27** : 7.
- \**Pentila rogersi parapetreia* Rebel, 1908. Fig. genitalia, Stempffer & Bennett, 1961 : 1175.

- parapetreia* ab. *derema* Strand, 1911.
- \**Pentila rotha rotha* Hewitson, 1873. Fig. genitalia, Stempffer & Bennett, 1961 : 1140.
- \**Pentila rotha marianna* Suffert, 1904. Fig. H. H. Druce, 1910, *Ill. African Lycaenidae* pl. 1. Fig. genitalia, Stempffer & Bennett, 1961 : 1142.
- \**Pentila subfuscata* Hawker Smith, 1933, *Stylops* 2 : 3. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1172.
- \**Pentila tachyroides* Dewitz, 1799. Fig. genitalia, Stempffer & Bennett, 1961 : 1176.
- mylothrina* Butler, 1888.
- \**Pentila tachyroides* f. *roidesta* Suffert, 1904.
- Pentila telesippe* Grünberg, see *abraxas maculata*.
- \**Pentila torrida* (Kirby), 1887. Fig. Smith & Kirby, 1887. Fig. genitalia, Stempffer & Bennett, 1961 : 1204.
- lavinia* (Kirby), 1890.
- Pentila tripunctata* Aurivillius, see *abraxas*.
- Pentila tripunctata* H. H. Druce, see *petreia*.
- \**Pentila tropicalis tropicalis* (Boisduval), 1847. Fig. Hewitson, 1866. Fig. genitalia, Stempffer & Bennett, 1961 : 1103.
- \**Pentila tropicalis chyulu* van Someren, 1939, *Jl E. Africa Uganda nat. Hist. Soc.* 14 : 145. Fig. genitalia, Stempffer & Bennett, 1961 : 1110.
- \**Pentila tropicalis mombasae* (Smith & Kirby), 1889. Fig. genitalia, Stempffer & Bennett, 1961 : 1108.
- \**Pentila tropicalis* f. *lasti* (Smith & Kirby), 1889. Fig. genitalia, Stempffer & Bennett, 1961 : 1109.
- Pentila tropicalis* f. *sigiensis* Strand, 1910.
- \**Pentila tropicalis swynnertoni* Stevenson, 1940 *J. ent. Soc. sth. Afr.* 3 : 101, fig.
- \**Pentila umangiana umangiana* Aurivillius, 1898. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1150.
- \**Pentila umangiana connectens* Hulstaert, 1924, *Revue zool. afr.* 12 : 115. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1154.
- \**Pentila umangiana fontainei* Stempffer & Bennett, 1961 : 1153, fig. and fig. genitalia.
- \**Pentila umangiana prodita* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1156. Fig. and fig. genitalia, Stempffer & Bennett, 1961 : 1152.
- Pentila umbra* Holland, 1892. Fig. Aurivillius in Seitz, 1914-25.
- Pentila yaunda* Karsch, 1895. Fig. H. H. Druce, 1910, *Ill. African Lycaenidae*, (probably only a synonym of *abraxas maculata* Kirby).

### Genus *LIPTENARA* Bethune Baker

*Liptenara* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) 16 : 186. Type-species : *Liptenara batesi* Bethune Baker, 1915, by original designation.

*Eyes* palpi and legs similar to those of *Pentila*.

*Wing venation* (Text-fig. 234). Only differs from that of *Pentila* in a single detail, namely vein 11 arises somewhat nearer to the base of the wing.  
*Male genitalia* (Text-fig. 11). Quite similar to those of *Pentila*.

I do not see any important character on which to separate *Liptenara* from *Pentila*. The species are easy to recognize on account of the large white subapical mark, but in my opinion they scarcely merit generic status.

LIST OF SPECIES OF *Liptenara*

- \**Liptenara batesi* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) **16** : 187. Fig. genitalia, Stempffer & Bennett, 1961 : 1205.
- \**Liptenara hiendlmayri* (Dewitz), 1886. Fig. genitalia, Stempffer & Bennett, 1961 : 1208.
- \**Liptenara schoutedeni* (Hawker Smith), 1926, *Revue zool. afr.* **14** : 238. Fig. genitalia, Stempffer & Bennett, 1961 : 1207.

Genus *ORNIPHOLIDOTOS* Bethune Baker

*Ornipholidotus* Bethune Baker, 1914, *Trans. ent. Soc. Lond.* **1914** : 319. Type-species : *Pentila kirbyi* Aurivillius 1895.  
*Pentila* Westwood (partim) ; Aurivillius 1898 : 263 ; 1914 : 310.

In the original description of this genus, Bethune Baker specified *Pentila muhata* Dewitz, 1886, as its type-species, and figured (l.c. pl. 58, fig. 10) the male genitalia of what he took to be this species.

Through the kindness of Dr. Hannemann of the Berlin Museum, I obtained on loan the two specimens which served Dewitz as the "types" of his original description.



FIG. 11. *Liptenara batesi* Bethune Baker, ♂ genitalia.

One of them does in fact have a label referring to this description. Examination of the fore tarsi shows that one of these is a male, the other a female but both lack the extremity of the abdomen and, besides, are rather discoloured, probably on account of age. Among the hundreds of specimens of *Ornipholidotos* which I have had the opportunity of examining, collected more or less recently, I have found none which can undoubtedly be regarded as exactly matching Dewitz's "type" specimens of *muhata*. In the absence of genitalia for comparison and in view of the inconclusive nature of any comparison based on external characters in this genus, it is, therefore, impossible at present to identify Dewitz's species, which must remain a *species dubium*.

On the other hand the male genitalia figured by Bethune Baker as those of *muhata* are instantly recognizable as those of the well known species *O. kirbyi* (*Pentila kirbyi* Aurivillius, 1895), the holotype of which I was able to dissect in 1947, and of which I have examined the genitalia of some fifty specimens from various African localities.

We have therefore a case in which (1) the species named as the type-species of the genus is a *species dubium* (*muhata*) and (2) the species on which the description of the genus was in fact based is an easily recognized species, currently known as *kirbyi*. In order to overcome the uncertainties of this situation I am applying to the International Commission on Zoological Nomenclature to set aside all type-fixations for the genus *Ornipholidotos* made prior to their ruling and to rule that the type-species of that genus be *Pentila kirbyi* Aurivillius (1895, *Ent. Tidskr.* **16** : 198) as defined by Stempffer (1947, *Revue Zool. Bot. afr.* **40** : 169).

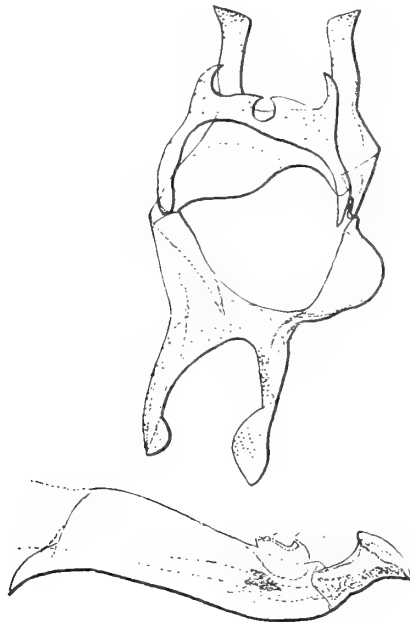


FIG. 12. *Ornipholidotos kirbyi* (Aurivillius), ♂ genitalia.

If, as seems possible, it should transpire in the light of further evidence, that *muhata* and *kirbyi* become synonyms, the type-species will remain the same. Only its name will be changed.

In anticipation of a favourable decision on my application, I am proceeding on the basis that the type-species of *Ornipholidotos* is *O. kirbyi*.

*Head* small ; eyes large and naked ; palpi very small and very short, divergent, clothed with scales below ; antennae similar to those of *Pentila* ; thorax short and slender ; abdomen long, swollen in its apical portion, especially in the ♀. Legs similar to those of *Pentila*.

*Wing shape* : fore wing not so long as in *Pentila* ; in all the species except *O. paradoxa* H. H. Druce, all four wings are translucent white with costal margin and the apex of the fore wings and the hind margin of all four wings more or less broadly blackish.

*Wing venation* (Text-fig. 235). Cell much elongated, though on the whole slightly shorter than that of *Pentila* ; discocellular shorter than in *Pentila*.

*Male genitalia* (Text-fig. 12, *kirbyi*). (See also Bethune Baker, *Trans. ent. Soc. Lond.* **1914**: lviii, fig. 10, and Stempffer, 1947, *Rev. Zool. Bot. afr.* **30** : 167, fig. 2). Uncus composed of two long robust arms ; tegumen hood-shaped ; articulated on the vinculum, on the tergite-sternite suture, there are two large asymmetrical processes, which are widened and fused distally and are provided with a strong hook ; because of their point of attachment these processes cannot be regarded as subunci ; these peculiar processes are found, though modified in shape, in all the other species of *Ornipholidotos* that I have studied ; vinculum broad ; there are no distinct articulated valves but only simple expansions of the vinculum which have a spatulate apex ; penis elongate, its distal end bent back towards the dorsum, slightly constricted just before the

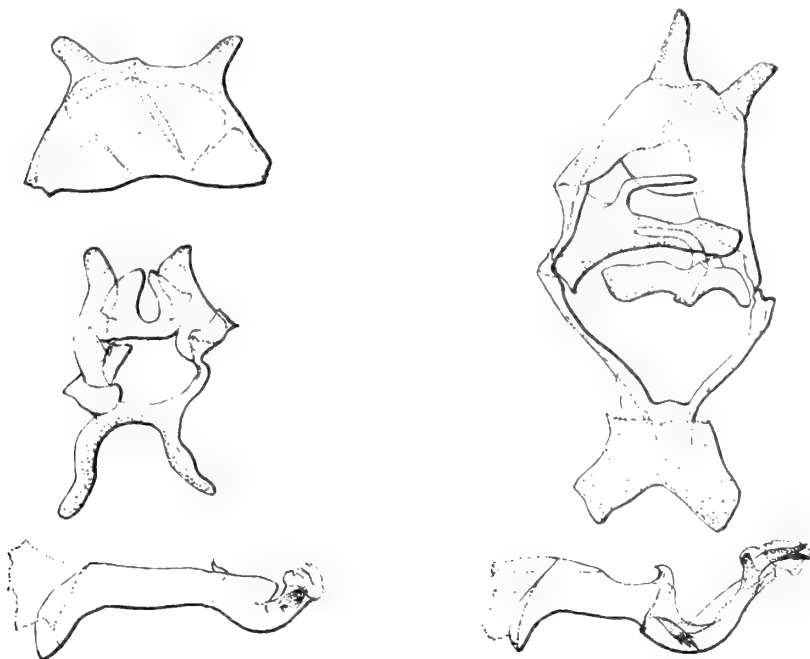


FIG. 13. *Ornipholidotos ntebi* (Bethune Baker), ♂ genitalia.

FIG. 14. *Ornipholidotos peucetia* (Hewitson), ♂ genitalia.

broadened apex ; vesica enclosing a strong spine surrounded by a cluster of smaller spines and, in addition, covered with little cornuti which give it a shagreened appearance ; uncus bearing long strong bristles ; there are long fine hairs at the apices of the vinculum expansions.

Elsewhere I have figured the male genitalia (see list below) of *bakotae*, *bitjeensis*, *gabonensis*, *jacksoni*, *katangae*, *onitshae*, *overlaeti*, *teroensis*, and *ugandae*. Here I figure in addition the genitalia of *ntebi* (Text-fig. 13), *peucetia* (Text-fig. 14), *paradoxa* (Text-fig. 15) and *latimargo* (Text-fig. 16).

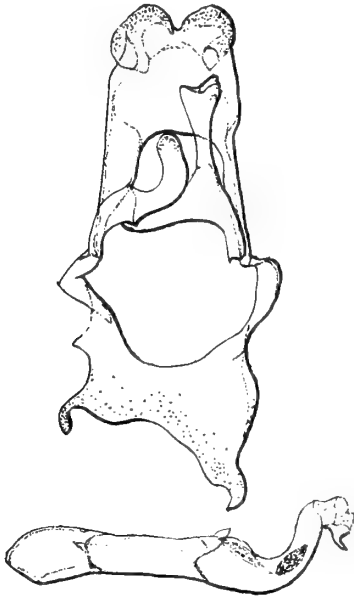


FIG. 15. *Ornipholidotos paradoxa* (Druce), ♂ genitalia.



FIG. 16. *Ornipholidotos latimargo* (Hawker Smith), ♂ genitalia.

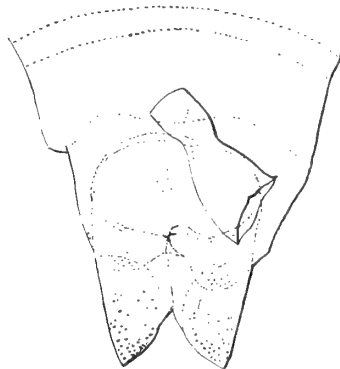


FIG. 17. *Ornipholidotos peucetia* (Hewitson), ♀ genitalia.



As one can ascertain by comparing all these figures, the male genitalia of the species of *Ornipholidotos* show an extraordinary diversity. Nevertheless they present good generic characters in the constant shape of the penis, the absence of true valves articulated on the vinculum, the presence of articulated processes on the tergite-sternite suture and the general asymmetry. The female genitalia of the species of *Ornipholidotos* are also asymmetrical. In *O. peucetia* (Text-fig. 17, abdomen figured flattened dorso-ventrally), for example, notice that the ostium bursae, instead of being situated below the ostium oviductus, is twisted to the left through an angle of about 45 degrees and is visible to the naked eye as a small chitinous trumpet-shaped excrescence on the side of the abdomen.

There are two hypotheses to account for the external resemblance coupled with the diversity in the structure of the genitalia in the species of *Ornipholidotos*. Either we can suppose lines of descent from widely different ancestors, when the similarity in external characters would be due to convergent evolution similar to that which resulted in mimicry ; or we can suppose a single line of descent giving rise to species whose external characters have remained pretty well constant, whilst the genitalia have evolved in a disorderly, anarchical manner, tending to produce species which are very diverse and sometimes unstable, as in *O. overlaeti*, in which species the dissection of over 50 males produced no two specimens the genitalia of which were rigorously identical, the variations in the shape of the uncus being sometimes quite considerable. Nevertheless this individual variation remains within such limits that one has no cause to doubt their specific identity. It is this observation which inclines me to accept the second hypothesis.

The caterpillar of *O. muhata* (?) has been described by T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 206). It feeds on lichens and resembles a *Lepisma*, being broadly rounded anteriorly and ending in a sharp point posteriorly. Each segment bears 3-4 black spines. The head is protected by a collar. Its green, grey and black colour blends with that of the lichen.

LIST OF SPECIES OF *Ornipholidotos*

- \**Ornipholidotos bakotae* Stempffer, 1962 : 1137, fig. and fig. genitalia.
- \**Ornipholidotos bitjeensis* Stempffer, 1957, *Bull. Inst. fr. Afr. noire* **19** : 209, fig. genitalia.
- \**Ornipholidotos camerunensis* Stempffer, 1964 : 1227, fig.
- \**Ornipholidotos congoensis* Stempffer, 1964 : 1228, fig.
- Ornipholidotos emarginata* (Hawker Smith), 1933, *Stylops* **2** : 4.
- \**Ornipholidotos gabonensis* Stempffer, 1947, *Revue Zool. Bot. afr.* **40** : 169, fig. and fig. genitalia.
- \**Ornipholidotos jacksoni* Stempffer, 1961 : 11, fig. and fig. genitalia.
- \**Ornipholidotos katangae* Stempffer, 1947, *Revue Zool. Bot. afr.* **40** : 170, figs.
- \**Ornipholidotos kirbyi* Aurivillius, 1895. Fig. Smith & Kirby, *Rhop. exot.* **2** (as *muhata*). Fig. genitalia, Stempffer, 1947, *Revue Zool. Bot. afr.* **40** : 169.

- Ornipholidotos kirbyi fumata* f. (Schultze), 1923, *Ergebn. 2te D. Z. Afr. Exp.* 1910-II, 1 : 1160.
- \**Ornipholidotos latimargo* (Hawker Smith), 1933, *Stylops* 2 : 3.
- Ornipholidotos muhata* (Dewitz), 1886.
- \**Ornipholidotos nigeriae* Stempffer, 1964 : 1230, fig.
- \**Ornipholidotos ntebi* (Bethune Baker), 1906.
- \**Ornipholidotos onitshae* Stempffer, 1962 : 1135, fig. and fig. genitalia.
- \**Ornipholidotos overlaeti* Stempffer, 1947, *Revue Zool. Bot. afr.* 40 : 171, fig. and fig. genitalia.
- \**Ornipholidotos paradoxa* (H. H. Druce), 1910.
- \**Ornipholidotos perfragilis* (Holland), 1890.  
*O. sylphida* (Staudinger), 1891. Fig. Smith & Kirby, 1892.
- Ornipholidotos peucedata* (Smith), see *peucea*.
- \**Ornipholidotos peucea* (Hewitson), 1866.  
*peucedata* (Smith), 1889.
- \**Ornipholidotos peucea chyluensis* (van Someren), 1939, *Jl E. Africa Uganda nat. Hist. Soc.* 14 : 146.
- Ornipholidotos peucea orientalis* (Storace), 1947, *Annali Mus. civ. Stor. nat. Giacomo Doria* 63 : 77.
- Ornipholidotos peucea penningtoni* (Riley), 1944, *Entomologist* 77 : 29.
- \**Ornipholidotos sylpha* (Kirby), 1890. Fig. Smith & Kirby, 1892.
- Ornipholidotos sylphida* (Staudinger), see *perfragilis* Holland.
- \**Ornipholidotos teroensis* Stempffer, 1957, *Bull. Inst. fr. Afr. noire* 19 : 211, fig. genitalia.
- Ornipholidotos tirza* (Hewitson), 1873. Fig. Smith & Kirby, 1893.
- \**Ornipholidotos ugandae* Stempffer, 1947, *Revue Zool. Bot. afr.* 40 : 170, fig. and fig. genitalia.



FIG. 18. *Durbania amakosa* Trimen, ♂ genitalia.

Genus **DURBANIA** Trimen

*D'Urbania* Trimen, 1862, *Trans. ent. Soc. Lond.* (3) **1** : 400 ; Aurivillius, 1898 : 264.

*Durbania* Trimen ; Aurivillius, 1914 : 302 ; Murray 1935 : 49. Type-species : *D'Urbania amakosa* Trimen, by monotypy.

*Head* small, frons and vertex shortly pilose ; eyes smooth ; palpi fairly long, densely scaly, second segment long and robust, third short, slightly acuminate ; antennae short, composed of 24 to 27 segments, rather thick, with a distinct cylindrical gradual club having the last four segments partly fused ; thorax short, densely clothed with short hairs above and with scales and hair-scales below ; abdomen of medium length, scaly ; legs robust, clothed with scales but no hairs, tibiae with 2-3 delicate spines below, tarsi long, spinose beneath ; fore tarsi of ♂ unsegmented.

*Wing venation* (Text-fig. 236). Fore wing : vein 11 originates from the cell at a point nearer to the origin of vein 10 than to the base. Hind wing with a short precostal vein at the base of the wing.

*Male genitalia* (Text-fig. 18). Uncus rounded with a shallow median depression, fused to a fairly large tegumen ; no subunci ; vinculum narrow and prolonged to form a large triangular saccus ; valves oblong with a regular outline and rounded apex ; base of penis robust, gradually becoming more slender distally, and ending with a sharp point with a wide opening on its dorsal surface ; uncus and valves abundantly clothed with fine hairs.

The male genitalia of *D. limbata* are very close to those of *D. amakosa*, only the apex of the valves is lightly excised.

The early stages of *D. amakosa* have been described by Trimen (1887, *S. Afr. Butterflies* **2** : 216).

LIST OF SPECIES OF *Durbania*

*Durbania amabilis* Staudinger, see *limbata*.

\**Durbania amakosa amakosa* Trimen, 1862.

*Durbania amakosa ayresi* van Son, 1941, *Jl ent. Soc. sth. Afr.* **4** : 182.

*Durbania amakosa natalensis* van Son, 1959, *Novos Taxa ent.* **16** : 8. Fig.

\**Durbania amakosa penningtoni* van Son, 1959, *Novos Taxa ent.* **16** : 17. Fig.

\**Durbania limbata* Trimen, 1887.

*amabilis* Staudinger, 1888.

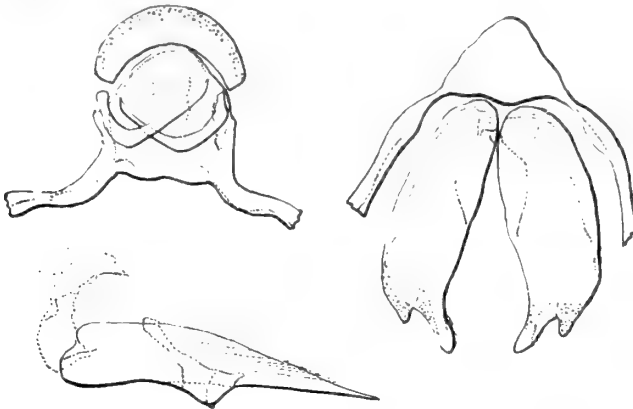


FIG. 19. *Durbaniella clarki* (van Son), ♂ genitalia.

Genus **DURBANIELLA** van Son

*Durbaniella* van Son, 1959, *Novos Taxa ent.* **16** : 10. Type-species : *Durbania clarki* van Son, 1941, by monotypy.

Differs from the genus *Durbania* in the following characters : *Palpi*, third joint very much reduced, not more than 1/5th the length of the second joint ; antennae with 20 segments, club large and flattened.

*Wing venation* (van Son, 1959, *Novos Taxa ent.* **16**, fig. 2). Fore wing, vein 11 arises from the cell midway between the base of the wing and the origin of vein 10. Hind wing with a small precostal vein.

*Male genitalia* (Text-fig. 19). Uncus crescent-shaped, fused to the margin of the rather large oval tegumen. Subunci long, curved, evenly tapering. Vinculum narrow, produced to form a wide triangular saccus. Valves oblong, the two processes separated apically, their extremities rounded, the lower process longer than the upper one. Penis basally stout, tapering evenly and ending in a sharp point broadly open dorsally. Uncus and apex of valves hairy.

LIST OF SPECIES OF *Durbaniella*

\****Durbaniella clarki*** (van Son), 1941, *Jl ent. Soc. sth. Afr.* **4** : 183 ; fig., 1959, *Novos Taxa ent.* **16** : 10.

Genus **DURBANIOPSIS** van Son

*Durbaniopsis* van Son, 1959, *Novos Taxa ent.* **16** : 12. Type-species : *Durbania saga* Trimen, 1883, by monotypy.

*D'Urbania* Trimen (partim) ; Aurivillius, 1898 : 265.

*Durbania* Trimen (partim) ; Aurivillius, 1914 : 303 ; Murray, 1935 : 52.

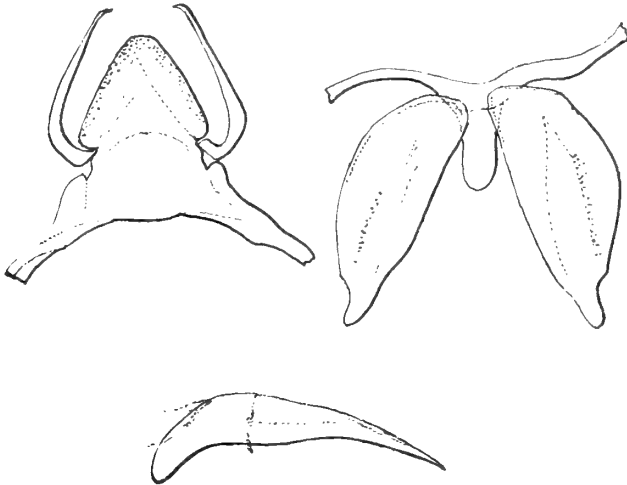


FIG. 20. *Durbaniopsis saga* (Trimen), ♂ genitalia.

*Palpi* densely scaled, third joint much reduced, subconic, barely one-fourth the length of second joint ; antennae with 32 segments, the club large and flattened.

*Wing venation* (see van Son, 1959, *Novos Taxa ent.* **16** : fig. 3). Vein 11 of fore wing arises much nearer to the origin of vein 10 than to the base of the wing. Hind wing cell much shorter than in *Durbaniella* and with a small precostal vein.

*Male genitalia* (Text-fig. 20). Uncus crescent-shaped with rounded apex and straight sides, fused to the subtriangular tegumen. Subunci very long, slender, curved near their base ; shown spread out in the illustration, in their normal position they lie folded under the tegumen. Vinculum narrow, prolonged in a triangular saccus. Valves oblong, the apex rounded, not divided. Penis like that of *Durbania* and *Durbaniella*. Uncus and distal part of the valves covered with fine hair.

The simple symmetrical genitalia of *Durbania*, *Durbaniella* and *Durbaniopsis* show common characters, although subunci are lacking in *Durbania*. They are very far removed from those of *Telipna*, *Pentila* and *Ornipholidotos*. In spite of the presence of a precostal vein on the hind wings in both these groups of genera, I consider they are not truly related.

LIST OF SPECIES OF *Durbaniopsis*

\**Durbaniopsis saga* (Trimen), 1883. Fig. Aurivillius in Seitz, 1914.

Genus *MIMACRAEA* Butler

*Mimacraea* Butler, 1872, *Lep. exot.* : 104 ; Aurivillius, 1898 : 265, 1918 : 312 ; Pinhey, 1949 : 97.

Type-species : *Mimacraea darwinii* Butler, 1872, by original designation.

*Eyes* smooth ; palpi moderately long, clothed below with black scales, the third segment bearing a few white scales at the apex ; antennae about half as long as the costa, club elongated and progressively swollen ; thorax rather slender ; abdomen long, reaching slightly beyond the anal angle ; legs robust, black, white-annulated, fore tarsi of ♂ unsegmented and finely spinose below.

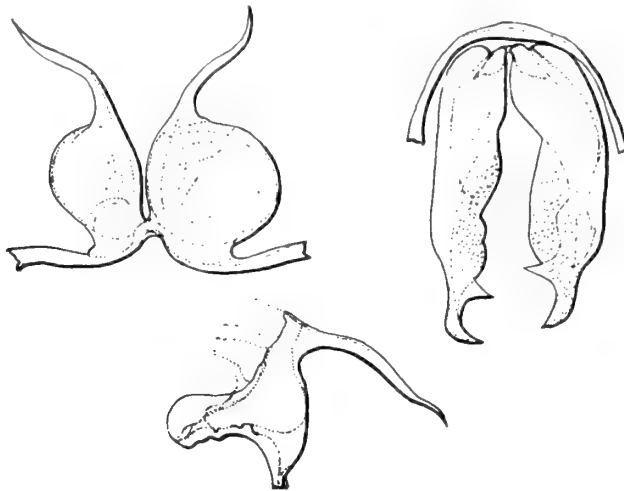


FIG. 21. *Mimacraea darwinii* Butler, ♂ genitalia.

*Wing venation* (Text-fig. 237). Fore wing cell short and not reaching the middle of the wing ; vein 7 arising from 6, 8 and 9 from 7. Hind wing cell short, not reaching the middle of the wing ; 7 arising from 6.

*Male genitalia* (Text-fig. 21). Uncus composed of two large hemispherical lobes which are hollow and distinctly asymmetrical, fused together at the base for a very short distance, each lobe bearing anteriorly a very long, tapered, horn-shaped process ; no subunci ; tegumen reduced to a narrow strip ; vinculum narrow. Lower fultura welded to a fold at the base of the valves and closely sheathing the base of the penis ; valves oblong, with the upper process bearing two strong apical teeth, the lower process semi-membranous. Penis of a peculiar shape, the massive base widely open proximally for the passage of the ductus, the distal half a long, slender, slightly curved point at right-angles to the base ; there are some pubescence on the uncus, many long hairs on the lower process of the valves and a few short hairs on the upper process.

The male genitalia of all the species of *Mimacraea* that I have been able to examine are extremely similar and of the *darwinii* type ; as specific characters one can only point to slight modifications in the form of the apex of the valves.

The species of *Mimacraea* have a very characteristic facies, which enables one to distinguish them at once from related genera ; they resemble, often in an almost startling manner, certain species of Acraeinae of the genera *Acraea* and *Bematistes*. Since the Acraeinae are not attacked by insectivorous predators, because of their nauseating smell, *Mimacraea* is often quoted as an example of Batesian mimicry. As in the case of most mimetic species, the colours and patterns in *Mimacraea* are very variable individually. It seems to me probable that some forms, described as species, are in fact really subspecies or even individual forms.

The early stages of *M. marshalli dohertyi* Rothschild have been observed by van Someren (see Poulton, 1924, *Trans. ent. Soc. Lond.* **1924** : 152). The larva is clothed in small barbed spicules and very long fine hair which spreads laterally and gives it the appearance of a moth larva ; it feeds on lichens and is nocturnal. The larva of *M. krausei* Dewitz has been briefly described by T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 207). It is similar to that of *M. dohertyi* but much darker brown and of the same habits.

#### LIST OF SPECIES OF *Mimacraea*

- Mimacraea angustata* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1163.
- \**Mimacraea apicalis* Smith & Kirby, 1890.
- \**Mimacraea charmian charmian* Smith & Kirby, 1890.
- Mimacraea charmian ertli* Talbot, 1924, *Entomologist* **57** : 38.
- Mimacraea costleyi* H. H. Druce, 1912.
- \**Mimacraea darwinii* Butler, 1872. (*darwinia* emend.).
- Mimacraea eltringhami eltringhami* H. H. Druce, 1912.
- Mimacraea eltringhami burgeoni* Hawker Smith, 1928, *Revue Zool. Bot. afr.* **16** : 214.
- \**Mimacraea flavefasciata* Schultze, 1912.
- Mimacraea fulvaria* Aurivillius, 1895.
- Mimacraea gelinia* (Oberthur), 1893.

- Mimacraea graeseri* Schultze, 1912.
- \**Mimacraea krausei krausei* Dewitz, 1889.
- \**Mimacraea krausei* ab. *obsolescens* Hawker Smith, 1926, *Revue zool. afr.* 14 : 238.
- Mimacraea krausei* f. *citrifascia* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 71.
- Mimacraea krausei* f. *viviana* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 71, fig.
- Mimacraea krausei elgonae* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 71, fig.
- Mimacraea krausei karschioides* Carpenter & Jackson, 1950, *Proc. R. ent. Soc. Lond.* (B) 19 : 106.
- \**Mimacraea krausei masindae* Bethune Baker, 1913.
- \**Mimacraea krausei poultoni* Neave, 1904.  
*luteomaculata* Grünberg, 1908.
- \**Mimacraea lacta* Schultze, 1912. Fig. Aurivillius in Seitz, 1918.
- \**Mimacraea landbecki landbecki* H. H. Druce, 1910.
- Mimacraea landbecki* ab. *latifascia* Rebel, 1914, *Annln naturh. Mus. Wien* 28 : 263, fig.
- Mimacraea landbecki* ab. *flavescens* Rebel, 1914, *Annln naturh. Mus. Wien* 28 : 263, fig.
- Mimacraea luteomaculata* Grünberg, see *krausei poultoni*.
- Mimacraea mariae* Dufrane, 1945, *Bull. Anlns Soc. R. ent. Belg.* 81 : 115.
- \**Mimacraea marshalli marshalli* Trimen, 1898.
- \**Mimacraea marshalli dohertyi* Rothschild, 1901.
- \**Mimacraea marshalli dohertyi* f. *somereni* Talbot, 1937, *Trans. R. ent. Soc. Lond.* 86 : 63, fig.
- \**Mimacraea marshalli media* Talbot, 1937, *Trans. R. ent. Soc. Lond.* 86 : 63, fig.
- Mimacraea marshalli nzoia* Talbot, 1937, *Trans. R. ent. Soc. Lond.* 86 : 64, fig.
- Mimacraea neavei* Eltringham, 1909.
- Mimacraea neokoton* H. H. Druce, 1907.
- \**Mimacraea neurata neurata* Holland, 1895.
- Mimacraea neurata alciopina* Joicey & Talbot, 1924, *Entomologist* 57 : 38.
- \**Mimacraea neurata f. incurvata* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 205.
- Mimacraea neurata lineata* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 205.
- \**Mimacraea paragora* Rebel, 1911.
- Mimacraea pseudepaea* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1165.
- Mimacraea pulverulenta* Schultze, 1912.
- Mimacraea schmidtii* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1163.
- Mimacraea schubotzi* Schultze, 1912.
- Mimacraea skoptolos* H. H. Druce, 1907.
- Mimacraea telloides* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1165.

Genus *MIMERESIA* Stempffer

*Mimeresia* Stempffer, 1961 *Annl. Mus. R. Afr. cent. Sér. 4to* **94** : 24. Type-species : *Liptena libentina* Hewitson, 1886, by original designation.

*Pseuderesia* Butler (pro parte) ; Aurivillius, 1898 : 267 ; 1918 : 318.

*Eyes* large and smooth ; palpi rather long, ascending, extending broadly beyond the frons, the second joint densely scaly, the third short and pointed ; antennae long and delicate, white-banded, the club progressively expanding ; thorax moderately stout, abdomen long and reaching beyond the anal angle ; in the ♂ the tibiae of the fore leg often swollen (Text-fig. 23, *libentina*) and clothed in closely adpressed scales, tarsi not jointed ; in the ♀ the tibiae not swollen.

*Wing venation* (Text-fig. 238). On all four wings the cell is longer than in *Mimacraea* and reaches about midway. On the hind wing vein 5 arises nearer to 6 + 7 than to 4.

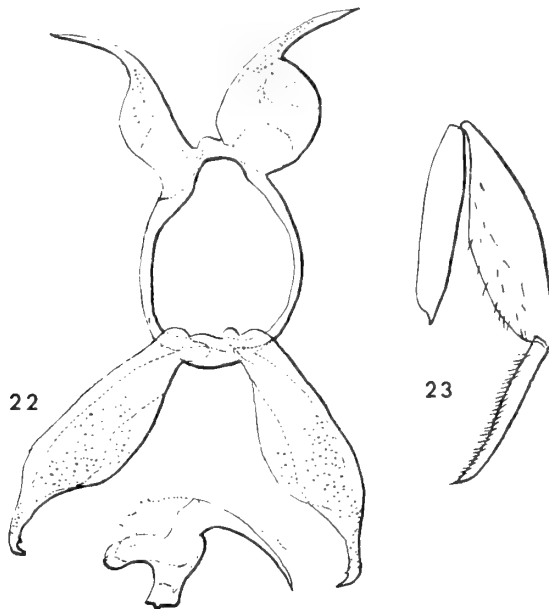
*Male genitalia*. Very similar to those of *Mimacraea*, except that the apex of the valves is falcate and not crescentic.

The genitalia of all the species of *Mimeresia* are very like those of *libentina* (Text-fig. 22) and far removed from *Pseuderesia*. Such close similarity cannot be attributed to chance. One cannot doubt the ancestral affinity of *Mimacraea* and *Mimeresia*, the two genera only being separable in form, pattern and slight differences in wing venation. The resemblance in facies between *Mimeresia* and *Pseuderesia* is at present not satisfactorily explained.

LIST OF SPECIES OF *Mimeresia*

*Mimeresia alberici* (Dufrane), see (♂) *neavei* and (♀) *moreelsi purpurea*.

*Mimeresia ashira* (Holland), see *debora*.



FIGS 22-23. *Mimeresia libentina* (Hewitson), ♂ genitalia and ♂ anterior leg.



- Mimeresia carlota* (Suffert), see *dinora*.
- \**Mimeresia cellularis* (Kirby), 1890 (Sept.). Fig. Smith & Kirby, 1891.  
*mondo* (Holland), 1890 (November).
- \**Mimeresia debora debora* (Kirby), 1890 (Sept.). Fig. Smith & Kirby, 1891.  
*ashira* (Holland), 1890 (November).
- \**Mimeresia debora barnsi* (Hawker Smith), 1933, *Stylops* 2 : 5. Fig. Stempffer, 1961.
- \**Mimeresia debora catori* (Bethune Baker), 1904. Fig. Stempffer, 1961.
- \**Mimeresia debora deborula* (Aurivillius), 1898. Fig. Smith & Kirby, 1894, as *debora* ♀.
- \**Mimeresia dinora dinora* (Kirby), 1890. Fig. Smith & Kirby, 1891.  
*carlota* (Suffert), 1904.
- \**Mimeresia dinora discirubra* (Talbot), 1937, *Trans. R. ent. Soc. Lond.* 86 : 60.  
Fig. Stempffer, 1954, *Bull. Soc. ent. Fr.* 59 : 89.
- \**Mimeresia drucei drucei* (Stempffer), 1954, *Bull. Soc. ent. Fr.* 59 : 89.
- \**Mimeresia drucei owerri* Stempffer, 1961 : 33, fig.
- \**Mimeresia drucei ugandae* (Stempffer), 1954, *Bull. Soc. ent. Fr.* 59 : 91.
- \**Mimeresia favillacea favillacea* (Grünberg), 1910. Fig. Aurivillius in Seitz, 1918.
- \**Mimeresia favillacea griseata* (Talbot), 1937, *Trans. R. ent. Soc. Lond.* 86 : 61.
- \**Mimeresia libentina libentina* (Hewitson), 1866.  
*Mimeresia libentina* f. *isabellae* (Schultze), 1916, *Arch. Naturgesch.* 82 A3 : 36.
- \**Mimeresia libentina* f. *zerita* (Plötz), 1880.  
*rubrica* (H. H. Druce), 1888 ; *zoraida* (Smith & Kirby), 1890.
- Mimeresia mondo* (Holland) see *cellularis* (Kirby).
- \**Mimeresia moreelsi moreelsi* (Aurivillius), 1901. Fig. Aurivillius in Seitz, 1918.
- \**Mimeresia moreelsi purpurea* (Hawker Smith), 1933, *Stylops* 2 : 5.  
*alberici* ♀ (Dufrane), 1945.
- \**Mimeresia moreelsi tessmanni* (Grünberg), 1910. Fig. Aurivillius in Seitz, 1918.  
*Mimeresia moreelsi tessmanni* f. *decolorata* (Hulstaert), 1924, *Revue zool. afr.* 12 : 117.
- \**Mimeresia moyambina* (Bethune Baker), 1904. Fig. Stempffer, 1961.
- \**Mimeresia neavei* (Joicey & Talbot), 1921, *Bull. Hill Mus. Witley* 1 : 80. Fig.  
*Mimeresia rubrica* (H. H. Druce), see *libentina* f. *zerita*.
- \**Mimeresia russulus russulus* (H. H. Druce), 1910.
- \**Mimeresia russulus katangae* (Hawker Smith), 1926, *Revue zool. afr.* 14 : 239.
- \**Mimeresia russulus unyoro* Stempffer, 1961 : 39. Fig.
- \**Mimeresia semirufa* (Smith), 1902.  
*Mimeresia zoraida* (Smith & Kirby), see *libentina* f. *zerita*.

Genus **PSEUDERESIA** Butler

*Pseuderesia* Butler, 1874, *Trans. ent. Soc. Lond.* 84 : 532. Type-species : *Pseuderesia catharina* Butler, 1874 (= *Pentila eleaza* Hewitson, 1873) by original designation.  
*Pseuderesia* Butler (pro parte) ; Aurivillius, 1898 : 266 ; 1918 : 318.

*Eyes* large, smooth ; *palpi* fairly long, ascending and projecting well beyond the frons, second segment clothed with long, erect hair, third segment short ; *antennae* long, slender, white-banded, club well differentiated, clavate ; *thorax* moderately stout, *abdomen* long and reaching beyond anal angle in the male ; ♂ *fore leg* with tibia not swollen, *tarsus* unsegmented, finely spinose below.

*Wing venation* (Text-fig. 239). In the ♂ of *eleaza* on the fore wings vein 10 arises from the upper angle of the cell ; in the ♀ it branches from the common stem of vein 6 and 7 + 8 + 9 ; in *isca* vein 10 arises from the anterior margin of the cell. On the hind wing vein 5 is nearer to 6 + 7 than to 4 in all species.

*Male genitalia* (Text-fig. 24). *Uncus* deeply divided, formed of two long symmetrical leaf-like expansions with pointed apices. *Subunci* absent. *Tegumen* reduced to a narrow strip. *Vinculum* narrow with an indistinct saccus. *Lower fultura* fused to the base of the valves and sheathing the internal part of the penis. *Valves* oblong, slightly falcate at the apex. *Penis* small, proximally widely open dorsally, the distal (outer) part strongly recurved. *Uncus* delicately pubescent, distal half of valves thickly hairy.

All the male genitalia of *Pseuderesia* that I have examined bear a definite resemblance to those of *P. eleaza* : the uncus is always bifid, though less deeply divided, the subunci are absent, the valves oblong. The penis of *P. paradoxa* shows a certain resemblance to that of *eleaza*, but those of *isca* (Text-fig. 25), *ouesso*, *nigeriana*, *phaeochiton*, *osheba*, *clenchi*, *rougeoti*, *beni* and *rutilo*, differ in that the distal portion of the penis is not recurved. The penis of *bicolor* (Text-fig. 26) is of a very different type, the outer portion very long, cylindrical, bent at an obtuse angle and open dorsally to allow the passage of the vesica, which bears numerous cornuti.

#### LIST OF SPECIES OF *Pseuderesia*

- \**Pseuderesia beni* Stempffer, 1961 : 19. Fig.
- \**Pseuderesia bicolor* Smith & Kirby, 1890.
- \**Pseuderesia clenchi* Stempffer, 1961 : 22. Fig.

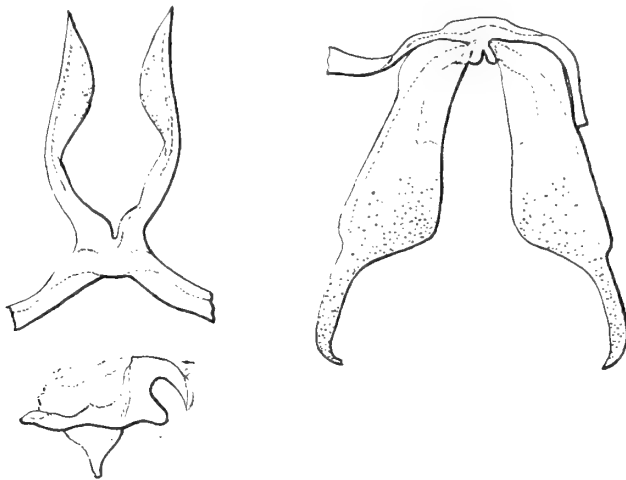


FIG. 24. *Pseuderesia eleaza eleaza* (Hewitson), ♂ genitalia.

- \**Pseuderesia eleaza eleaza* (Hewitson), 1873.  
*picta* Smith, 1898 ; *variegata* (Smith & Kirby), 1890.
- \**Pseuderesia eleaza catharina* Butler, 1874.
- \**Pseuderesia eleaza katera* Stempffer, 1961 : 14.
- \**Pseuderesia eleaza nigra* Cator, 1904.
- \**Pseuderesia eleaza vidua* Talbot, 1937, *Trans. R. ent. Soc. Lond.* **86** : 60. Fig.
- \**Pseuderesia isca isca* (Hewitson), 1873.  
*Pseuderesia isca* ab. *demaculata* Hulstaert, 1924, *Revue zool. afr.* **12** : 117.
- \**Pseuderesia isca magnimaculata* Rebel, 1914, *Annl'n naturh. Hofmus. Wien*  
**28** : 264.
- Pseuderesia mildbraedi* Schulze, see *osheba*.
- Pseuderesia minium* H. H. Druce, see *osheba*.

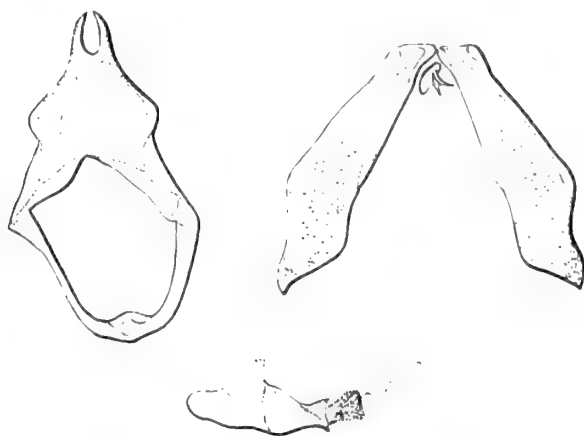


FIG. 25. *Pseuderesia isca* (Hewitson), ♂ genitalia.

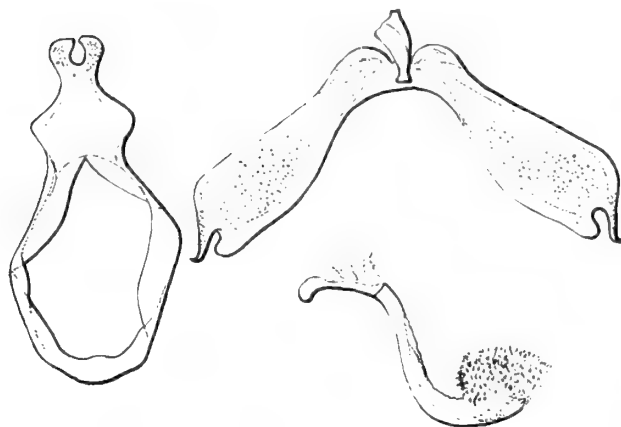


FIG. 26. *Pseuderesia bicolor* Smith & Kirby, ♂ genitalia.

- \**Pseuderesia nigeriana* Stempffer, 1962 : 1139. Fig.  
 \**Pseuderesia osheba* (Holland), 1890.  
*minium* H. H. Druce, 1910 ; *mildbraedi* Schultze, 1912.  
 \**Pseuderesia onesso* Stempffer, 1962 : 1143. Fig.  
*Pseuderesia paradoxa paradoxa* Schultze, 1916, *Arch. Naturgesch.* **82**, A3 : 37.  
 \**Pseuderesia paradoxa orientalis* Stempffer, 1962 : 1145. Fig.  
 \**Pseuderesia phaeochiton* Grünberg, 1910. Fig. Aurivillius in Seitz, 1918.  
*Pseuderesia picta* Smith, see *eleaza*.  
 \**Pseuderesia rougeoti* Stempffer, 1961 : 21. Fig.  
 \**Pseuderesia rutilo* H. H. Druce, 1910.  
*Pseuderesia variegata* Smith & Kirby, see *eleaza*.

SPECIES DOUBTFULLY REFERRED TO *Pseuderesia*

- Pseuderesia cornucopiae* (Holland), 1892.  
*Pseuderesia fusca* Cator, 1904.  
*Pseuderesia mapongua* (Holland), 1893.

Not having been able to examine these species I am unable to decide whether they belong to *Mimeresia* or to *Pseuderesia*.

Peters (1952, *Check List Butt. Eth. Region*) included in his list of species of *Pseuderesia*, under No. 1313a, *Pseuderesia* " *amaurina* Neu. 1928 ". This is an evident confusion with *Pseudacraea amaurina* Neustetter (1928, *Int. ent. Z.* **21** : 445). Neustetter did not describe any species of *Pseuderesia* under that name.

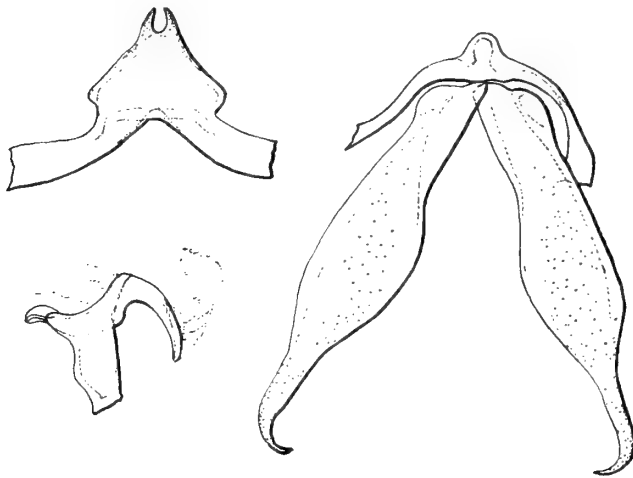


FIG. 27. *Citrinophila marginalis* Kirby, ♂ genitalia.

Genus *CITRINOPHILA* Kirby

*Citrinophila* Kirby, 1887, *Ann. Mag. nat. Hist.* (5) **19** : 367 ; Aurivillius, 1898 : 268 ; 1918 : 325.

Type-species : *Citrinophila marginalis* Kirby, by original designation.

*Eyes* naked : palpi fairly long, second segment laterally compressed, third segment slender, acuminate ; antennae black and white annulated, club sharply distinct, elongate, flattened ; legs black and white annulated, fore tarsi of ♂ unsegmented, finely spinose below.

*Wing venation* (Text-fig. 240). Differs from *Pseuderesia* in that the discoidal on the hind wing is straight between the points of origin of veins 4 and 5.

*Male genitalia* (Text-fig. 27). Uncus composed of two narrow lateral bands on the posterior margin of the tegumen each ending in a small sharply pointed process and separated by a deep concavity ; no subunci ; tegumen very large, subtriangular ; vinculum broad, with a small



FIG. 28. *Citrinophila unipunctata* Bethune Baker, ♂ genitalia.

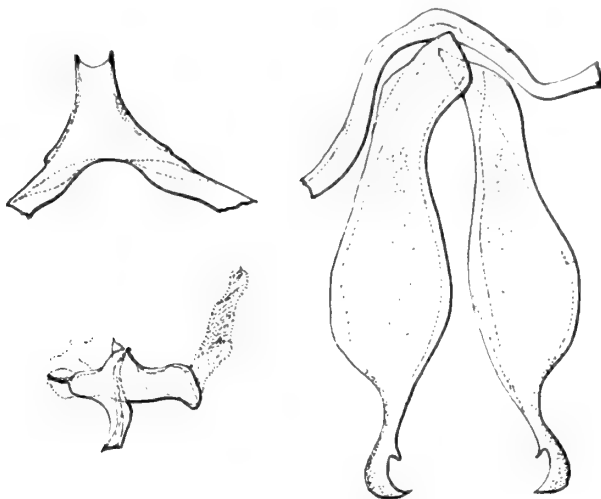


FIG. 29. *Citrinophila tenera* (Kirby), ♂ genitalia.

rounded saccus ; lower fultura fused to the base of the valves and sheathing the internal portion of the penis ; valves markedly oblong, with sharp, slightly falcate apices ; penis short, the external portion strongly recurved, with a wide opening on the dorsal surface, uncus and valves pilose.

Kirby has described several species which closely resemble *marginalis*, one of them (*limbata*) in the genus *Citrinophila*, the others *tenera*, *serena* and *similis* in the genus *Teriomima*. It is difficult to identify these species with certainty, as the available specimens do not agree precisely with the original descriptions, and Kirby did not state the sex of his holotypes. Aurivillius (1918 : 326) established the following pairs of synonyms, *similis* and *marginalis*, and *tenera* (Text-fig. 29) with *limbata*.

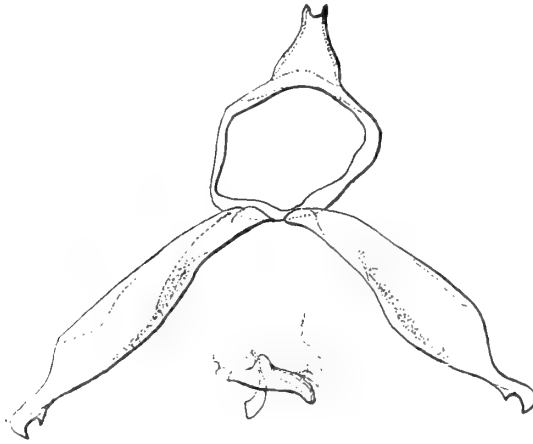


FIG. 30. *Citrinophila terias* Joicey & Talbot, ♂ genitalia.

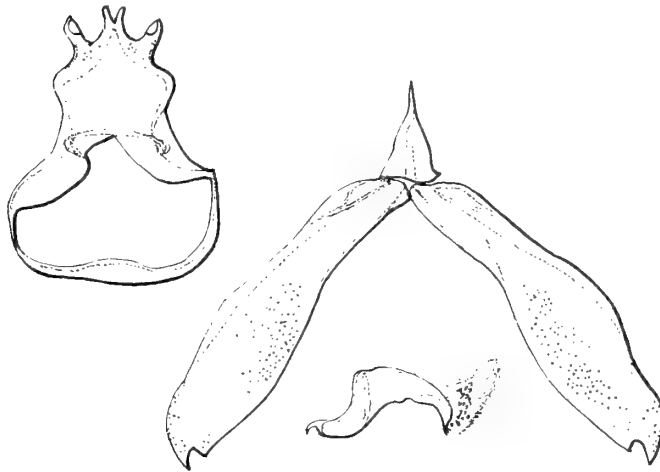


FIG. 31. *Citrinophila erastus* (Hewitson), ♂ genitalia.

A specimen which I believe to be referable to *limbata*, because of its faintly orange colour, has genitalia exactly like those of *marginalis*.

*Citrinophila terias* (Text-fig. 30) has armature in which the dorsum and the valves resemble the corresponding parts in *marginalis* but the distal part of the penis is only very slightly recurved.

In *Citrinophila unipunctata* (Text-fig. 28) the dorsum is very different from that of the preceding species: the uncus is formed of two long finger-like processes with rounded apices, and there is a lanceolate process fused at the base of the uncus and directed anteriorly; subunci lacking; tegumen much reduced; vinculum broad with faintly indicated saccus; valves like those of *marginalis*; penis feebly curved; uncus and valves pilose.

*Citrinophila erastus* (Text-fig. 31). Uncus composed of four short processes, those of the median pair divergent from the median line, the lateral pair with a shallow apical cavity; subunci lacking; tegumen lozenge-shaped; vinculum rather broad; valves oblong, the upper process terminating in a stout tooth; penis short, curved, vesica bearing stout cornuti. Uncus and lower margin and apices of the valves pilose.

It is apparent that the unci in the four species described above are of very different types. The genus *Citrinophila* is thus not very homogeneous, and the similarities of the facies of the included species may be the result of convergent evolution.

LIST OF SPECIES OF *Citrinophila*

- \**Citrinophila erastus erastus* (Hewitson), 1866.
- Citrinophila erastus* ab. *erasmus* (Kirby), 1887.
- Citrinophila erastus* ab. *flaveola* (Kirby), 1887.
- Citrinophila erastus* ab. *vulcanica* Schulze, 1916, *Arch. Naturgesch.* **82** A 3 : 37.
- \**Citrinophila erastus pallida* Hawker Smith, 1933, *Stylops* **2** : 6.
- \**Citrinophila limbata* Kirby, 1887. Fig. Smith & Kirby, 1888.
- \**Citrinophila marginalis* Kirby, 1887. Fig. Smith & Kirby, 1888.
- Citrinophila pusio* (Smith), 1898.
- Citrinophila regularis* Schulze, see *terias*.
- Citrinophila serena* (Kirby), 1890. Fig. Smith & Kirby, 1891.
- Citrinophila similis* (Kirby), 1887. Fig. Smith & Kirby, 1888.
- Citrinophila tenera* (Kirby), 1887. Fig. Smith & Kirby, 1888.
- \**Citrinophila terias* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 82. Fig. *regularis* Schulze, 1923.
- \**Citrinophila unipunctata* Bethune Baker, 1908.

Genus *TERIOMIMA* Kirby

*Teriomima* Kirby, 1887, *Ann. Mag. nat. Hist.* (5) **19** : 364; Stempffer & Bennett, 1953, *Bull. Br. Mus. nat. Hist.* (Ent.) **3** : 81. Type-species: *Teriomima subpunctata* Kirby, by original designation.

*Teriomima* Kirby (pro parte); Aurivillius, 1898 : 270; 1918 : 327; Swanepoel, 1953 : 188.

*Eyes* smooth ; palpi rather long, ascending, projecting beyond the frons, clothed with adpressed scales, the second segment stout, laterally compressed, the third segment slender, acuminate ; antennae rather short with a distinct, subcylindrical club ; ♂ fore legs with unsegmented tarsi, clothed below with fine spines.

*Wing venation* (Text-fig. 241).

*Male genitalia* (Text-fig. 32). Uncus bifid, lobes dilated at the base and tapering to blunt points bent ventrad ; no subunci ; tegumen rather large, vinculum rather wide ; fultura inferior sheathing the base of the penis ; valves oblong, slightly falcate at the apex and bearing a long gently curved harpe, penis long and stout, curved in the shape of a flattened S and bearing, near the blunt distal end, two ventrally directed lobes.

The male genitalia of all the species of *Teriomima* are figured by Stempffer and Bennett (1953). They are of the same type as those of *subpunctata*, although in *micra* and *parva* the valves are devoid of harpes.

#### LIST OF SPECIES OF *Teriomima*

*Teriomima delicatula* Kirby, see *subpunctata*.

\**Teriomima micra* (Grose Smith), 1898.

\**Teriomima parva* Hawker Smith, 1933, *Stylops* 2 : 6.

\**Teriomima puella* Kirby, 1887. Fig. Smith & Kirby, 1888.

\**Teriomima puellaris* (Trimen), 1894.

\**Teriomima subpunctata* Kirby, 1887. Fig. Smith & Kirby, 1888.

*delicatula* Kirby, 1890.

\**Teriomima zuluana* van Son, 1949, *Ann. Transv. Mus.* 21 : 211. Fig.



FIG. 32. *Teriomima subpunctata* Kirby, ♂ genitalia.



Genus **EUTHECTA** Bennett

*Euthecta* Bennett, 1954, *Entomologist* **87** : 170. Type-species : *Euthecta cooksoni* Bennett, 1954, by monotypy.

Eyes, palpi, antennae, legs and *wing venation* as in *Teriomina*.

*Male genitalia* (Text-fig. 33) : uncus conical, rather concave at the apex ; no subunci ; no special processes as in *Baliochila*. Penis very long, sickle-shaped, the basal part swollen, the external part ending in a sharp point.

LIST OF SPECIES OF *Euthecta*

\**Euthecta cooksoni* Bennett, 1954, *Entomologist* **87** : 171.

Genus **BALIOCHILA** Stempffer & Bennett

*Baliochila* Stempffer & Bennett, 1953, *Bull. Br. Mus. nat. Hist. (Ent.)* **3** : 85. Type-species : *Liptena aslauga* Trimen, 1873, by original designation.

*Teriomima* Kirby (pro parte) ; Aurivillius, 1898 : 271 ; 1918 : 328 ; Murray, 1935 : 54 ; Swanepoel, 1953 : 187.

Eyes, palpi, antennae, legs and *wing venation* as in *Teriomima*.

*Male genitalia* (Text-fig. 34). The ♂ genitalia of all the species of *Baliochila* have been described and figured by Bennett & Stempffer (1953). With the exception of *B. singularis* they present a common character which has justified the erection of the genus, viz. the presence of a pair of symmetrical processes, of various length, the bases of which are firmly attached to the dorsal face of the anellus internally, the outer margin being attached to the tegumen by a semi-membranous union. In the natural position these processes extend horizontally, on the axis of the abdomen, between the uncus and the penis ; they are sometimes crowned with spines, sometimes entirely covered with short stiff hair. One cannot regard them as subunci, since they are not articulated to the uncus-tegumen suture ; on the other hand, one cannot homologize them exactly with the asymmetrical processes of *Ornipholidotos*, which are articulated with the suture between tergite and sternite. For these reasons they are designated " special processes "

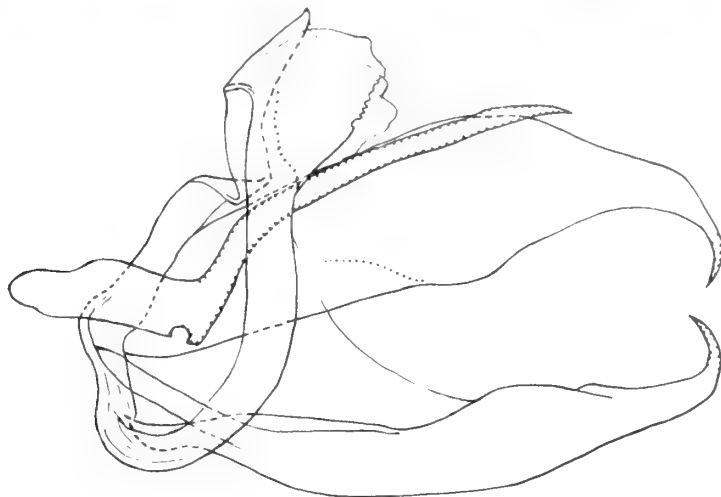


FIG. 33. *Euthecta cooksoni* Bennett, ♂ genitalia of type.

in the descriptions of these species. The valves of *Baliochila* are oblong, more or less falcate at the apex, and the penis never bears lobes distally like those of *Teriomima subpunctata*.

On the basis of the morphology of the male genitalia, *Baliochila* can be divided into four groups of species :—

a. Uncus bifid, the two branches widely separate, more or less slender, special processes rather short (Stempffer & Bennett, figs. 32–43) :—

*Baliochila aslauga*, *barnesi*, *neavei*, *hildegarda*, *dubiosa*, *nyasae*, *stygia*.

b. Uncus in form of a flattened median process excavate at the extremity, the special processes long and slender (figs. 44–45) :—

*Baliochila woodi*, *fragilis*.

c. Uncus bifid, the two branches slender and ending in a point, special processes long and stout (figs. 46–50) :—

*Baliochila minima*, *lipara*.

d. Uncus bifid, its two branches carried on a long common stem, no special processes, but the anellus bearing paired long slender processes (fig. 51) :—

*Baliochila singularis*.

#### LIST OF SPECIES OF *Baliochila*

\**Baliochila aslauga* (Trimen), 1873. Fig. Trimen, 1887.

\**Baliochila barnesi* Stempffer & Bennett, 1953 : 86. Fig.

\**Baliochila dubiosa* Stempffer & Bennett, 1953 : 90. Fig.

\**Baliochila fragilis* Stempffer & Bennett, 1953 : 95. Fig.



FIG. 34. *Baliochila aslauga* (Trimen), ♂ genitalia.

*Baliochila freya* (Smith & Kirby), see *hildegarda*.

- \**Baliochila hildegarda* (Kirby), 1887. Fig. Smith & Kirby, 1888.  
*freya* (Smith & Kirby), 1894.
- \**Baliochila lipara* Stempffer & Bennett, 1953 : 99. Fig.
- \**Baliochila minima minima* (Hawker Smith), 1933, *Stylops* 2 : 6. Fig. Stempffer & Bennett, 1953 : pl. 7, fig. 44.
- \**Baliochila minima amanica* Stempffer & Bennett, 1953 : 97. Fig.
- \**Baliochila minima latimarginata* (Hawker Smith), 1933, *Stylops* 2 : 7. Fig. Stempffer & Bennett, 1953 : pl. 7, fig. 47.
- \**Baliochila neavei* Stempffer & Bennett, 1953 : 88. Fig.
- \**Baliochila nyasae* Stempffer & Bennett, 1953 : 92. Fig.
- \**Baliochila petersi* Stempffer & Bennett, 1956, *Bull. Inst. fr. Afr. noire* 18 : 503.
- \**Baliochila singularis* Stempffer & Bennett, 1953 : 100. Fig.
- \**Baliochila stygia* (Talbot), 1935, *Entomologist's mon. Mag.* 71 : 72. Fig.
- \**Baliochila woodi* (Riley), 1943, *Entomologist* 76 : 225.

Genus **CNODONTES** Stempffer & Bennett

*Cnodontes* Stempffer & Bennett, 1963, *Bull. Br. Mus. nat. Hist. (Ent.)* 3 : 101. Type-species : *Durbania pallida* Trimen, 1898, by original designation.  
*Teriomima* Kirby (pro parte) ; Aurivillius, 1898 : 271 ; 1918 : 328 ; Murray, 1935 : 55 ; Swanepoel, 1953 : 188.

Eyes, palpi, antennae, legs and venation as in *Teriomima* and *Baliochila*.

Male genitalia (Text-fig. 35). The ♂ genitalia of all the species of *Cnodontes* have been figured either by Stempffer & Bennett in the paper referred to above, or by Bennett in the *Entomologist* (1954, 87 : 172 ; 1956, 89 : 115). They present a structural peculiarity not observed in any

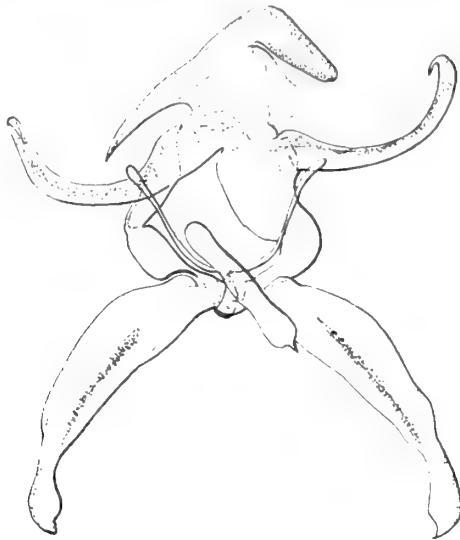


FIG. 35. *Cnodontes pallida* (Trimen), ♂ genitalia.

other holarctic, aethiopian or indo-malayan Lycaenid : the uncus is fused with the eighth tergite, which forms a kind of hood or sheath above it. Subunci are lacking. Tegumen triangular, its base bearing a pair of long finger-like processes which are not in any way attached to the anellus. Vinculum broad. Valves as in *Baliochila*. To the dorsal surface of the anellus are fused two long finger-like processes lying parallel to those of the tegumen. It seems that in *Cnodontes* the "special processes" of *Baliochila* are divided to form two independent pairs, one attached to the tegumen, the other to the anellus. Penis long. Uncus and valves pilose.

#### LIST OF SPECIES OF *Cnodontes*

- \**Cnodontes pallida* (Trimen), 1898.
- \**Cnodontes penningtoni* Bennett, 1954, *Entomologist* **87** : 171. Fig.
- \**Cnodontes vansomereni* Stempffer & Bennett, 1953 : 103. Fig.
- \**Cnodontes vansoni* Stempffer & Bennett, 1956, *Entomologist* **89** : 115. Fig.

#### Genus *LARINOPODA* Butler

*Larinopoda* Butler, 1871, *Trans. ent. Soc. Lond.* 172. Aurivillius, 1898 : 271 ; 1918 : 328.

Type-species : *Larinopoda lycaenoides* Butler, 1871 (= *Liptena lircaea* Hewitson, 1866), by monotypy.

Eyes smooth ; palpi with second segment long and clothed with adpressed scales, third segment slender, acuminate ; antennae short, slender, with a slightly swollen, flattened club ; thorax short, robust ; abdomen long with the apical segments much swollen in the ♀ ; legs strong, clothed with scales, the ♂ fore tarsi unsegmented, finely spinose below.

*Wing venation* (Text-fig. 242). Fore wing cell short, produced at the lower angle. Hind wing cell much produced at its lower angle.

*Male genitalia* (Text-fig. 36). Both the anterior and posterior edges of the uncus have a rounded depression, their two apices form a blunt point, the sides are slightly concave ; subunci long and curved, the basal portion swollen in the middle, the apex of the free portion rounded and without a terminal hook ; tegumen fairly large ; vinculum wide ; valves oval with rounded

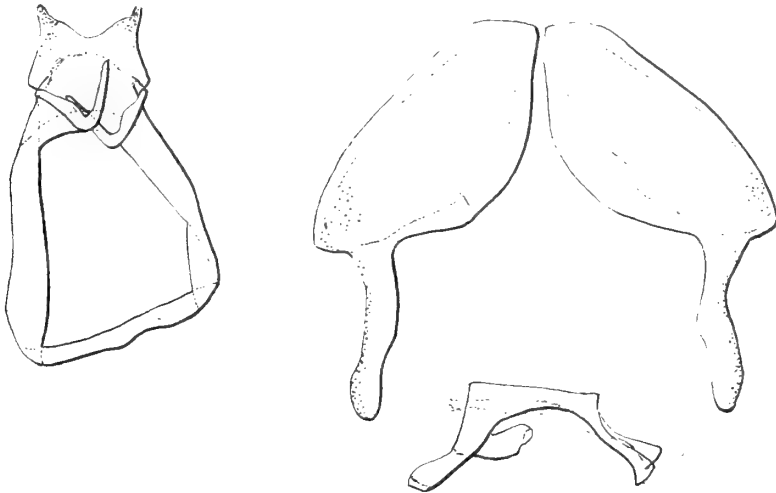


FIG. 36. *Larinopoda lircaea* (Hewitson), ♂ genitalia.

apex, the lower processus near its apex bearing a long finger-like process of which the apex is rounded ; internal portion of penis curved, and connected with the base of the valves by a short peduncle representing the lower fultura ; the external portion of the penis forming an obtuse angle with the internal portion, the distal third divided into two branches with spatulate apices ; uncus, distal portion and finger-like process of the valves all bear a few fine hairs.

Eltringham (1922, *Trans. ent. Soc. Lond.* **1922** : 254) described and figured the genitalia of most of the species of *Larinopoda*. They are all of a type very similar to those of *lircaea*. The genus is very homogeneous both in male genitalia and in facies, which recalls the European Pieridae ; Butler even placed his genus *Larinopoda* between *Euchloe* and *Nepheronia* in that family.

LIST OF SPECIES OF *Larinopoda*

- Larinopoda aspidos aspidos* H. H. Druce, 1890. Fig. Eltringham, 1922.  
*Larinopoda aspidos* f. *brenda* H. H. Druce, 1903.  
*Larinopoda aspidos* f. *latimarginata* Smith, 1898. Fig. Aurivillius in Seitz, 1918.  
*Larinopoda batesi* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 389.  
 \**Larinopoda eurema* (Plötz), 1880.  
     *varipes* Kirby, 1887 ; *libussa* Staudinger, 1888.  
 \**Larinopoda lagyra* (Hewitson), 1866.  
     *lara* Staudinger, 1891.  
*Larinopoda lagyra* f. *emilia* Suffert, 1904.  
*Larinopoda lagyra* f. *emilia* ab. *deficiens* Dufrane, 1953, *Bull. Annl. Soc. R. ent. Belg.* **89** : 48.  
*Larinopoda lagyra* f. *gyrala* Suffert, 1904. Fig. Aurivillius in Seitz, 1918.  
*Larinopoda lagyra* f. *punctata* H. H. Druce, 1910.  
*Larinopoda lara* Staudinger, see *lagyra*.  
*Larinopoda libussa* Staudinger, see *eurema*.  
 \**Larinopoda lircaea* (Hewitson), 1866.  
     *lycaenoides* Butler, 1871.  
*Larinopoda lircaea* f. *hermansii* Aurivillius, 1896.  
*Larinopoda lircaea* f. *innocentia* Gaede, 1915, *Int. ent. Z.* : III.  
*Larinopoda lircaea* f. *spuma* H. H. Druce, 1910.  
*Larinopoda lircaea* ab. *alenica* Strand, 1914, *Arch. Naturgesch.* **79** A 12 : 133.  
*Larinopoda lircaea* ab. *alenicola* Strand, 1914, l.c. : 133.  
*Larinopoda lircaea* ab. *benitonis* Strand, 1914, l.c. : 134.  
*Larinopoda lircaea* ab. *makoniensis* Strand, 1914, l.c. : 134.  
*Larinopoda lircaea* ab. *simekoa* Strand, 1914, l.c. : 134.  
*Larinopoda lircaea* ab. *bibundica* Strand, 1914, l.c. : 134.  
*Larinopoda lycaenoides* Butler, see *lircaea*.  
*Larinopoda soyauxii* (Dewitz), see *tera*.  
 \**Larinopoda tera* (Hewitson), 1873. Fig. Aurivillius in Seitz, 1918.  
     *soyauxii* Dewitz, 1879.  
*Larinopoda varipes* Kirby, see *eurema*.

Genus *FALCUNA* Stempffer & Bennett

*Falcuna* Stempffer & Bennett, 1963, *Bull. Br. Mus. nat. Hist. (Ent.)* **13** : 174. Type-species : *Liptena libyssa* Hewitson, 1866, by original designation.  
*Liptena* Hewitson (pro parte) ; Aurivillius, 1898 : 275 ; 1918 : 331.

*Eyes* smooth ; palpi rather long, extending beyond the frons, clothed with adpressed scales, the second segment laterally compressed, the third slender, blunt-pointed ; antennae short, white-ringed, with distinct subcylindrical club ; legs ringed with yellow, the fore tarsi of the ♂ not articulated.

*Wing venation* (Text-fig. 243). Only differs from that of *Liptena undularis* (type-species of the genus *Liptena*) in that veins 3 and 4 of the hind wing are separate at their points of origin whereas in *undularis* they arise from a short common stalk. However, this is not a valid generic character, for it also occurs in *fatima* and *submacula* which are true *Liptenas*.

*Male genitalia* (Text-fig. 37). Uncus subtriangular, shield-shaped, pointed caudad, almost completely separated from the tegumen to which it is only attached by two slender ligaments running from the centre of its ventral margin to the lateral margins of the tegumen. Subunci heavily chitinized, fused together along their inner margins distally, the distal margin strongly serrate. Tegumen large. Vinculum broad, the saccus little developed. Valves oblong, apically finger-like. Penis long, subcylindrical, heavily curved. Uncus densely, apex of valves lightly, pilose.

Fusion of the subunci is not known to occur in any other genus of African Lycaenidae. Its occurrence in every species of *Falcuna*, on the other hand, justifies the erection of the genus. All the species of the genus are rather uniform, besides, in external appearance.

LIST OF SPECIES OF *Falcuna*

- \**Falcuna campimus campimus* (Holland), 1890. Fig. Aurivillius in Seitz, 1918 ; genitalia, Stempffer & Bennett, 1963 : 191, figs.
- \**Falcuna campimus dilatata* (Schultze), 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1177. Fig. Stempffer & Bennett, 1963 : 192, figs.

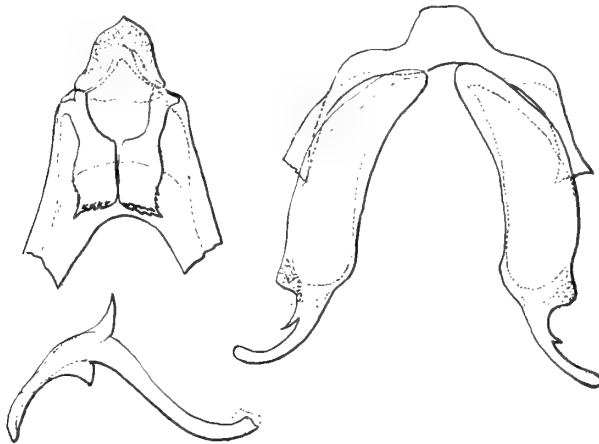


FIG. 37. *Falcuna libyssa libyssa* (Hewitson), ♂ genitalia.

- \**Falcuna dorothea* Stempffer & Bennett, 1963 : 190, figs.
- \**Falcuna hollandi hollandi* (Aurivillius), 1895. Fig. Aurivillius in Seitz, 1918 : genitalia, Stempffer & Bennett, 1963 : 185.
- \**Falcuna hollandi nigricans* Stempffer & Bennett, 1963 : 186, figs.
- \**Falcuna hollandi suffusa* Stempffer & Bennett, 1963 : 184, figs.
- \**Falcuna iturina* Stempffer & Bennett, 1963 : 187, figs.
- \**Falcuna kasai* Stempffer & Bennett, 1963 : 182, figs.
- \**Falcuna lacteata* Stempffer & Bennett, 1963 : 180, figs.
- \**Falcuna leonensis* Stempffer & Bennett, 1963 : 174, figs.
- \**Falcuna libyssa libyssa* (Hewitson), 1866. Fig. genitalia, Stempffer & Bennett, 1963 : 176.
- \**Falcuna libyssa angolensis* Stempffer & Bennett, 1963 : 177, figs.
- \**Falcuna libyssa cameroonica* Stempffer & Bennett, 1963 : 176, figs.
- Falcuna libyssa confluens* (Grünberg), see *orientalis* Bethune Baker.
- Falcuna libyssa latemarginata* Schultze, see *margarita* Suffert.
- \**Falcuna lybia* (Staudinger), 1891. Fig. Aurivillius in Seitz, 1918. Fig. genitalia, Stempffer & Bennett, 1963 : 193.
- \**Falcuna margarita* (Suffert), 1904. Fig. Stempffer & Bennett, 1963 : 181.  
    *libyssa latemarginata* Schultze, 1916.
- Falcuna melandeta* (Holland), 1893.
- \**Falcuna orientalis orientalis* (Bethune Baker), 1906. Fig. Aurivillius in Seitz, 1918. Fig. genitalia, Stempffer & Bennett, 1963 : 183, figs.  
    *libyssa confluens* Grünberg, 1908.
- \**Falcuna orientalis bwamba* Stempffer & Bennett, 1963 : 183, figs.
- \**Falcuna overlaeti* Stempffer & Bennett, 1963 : 190, figs.
- \**Falcuna reducta* Stempffer & Bennett, 1963 : 189, figs.
- \**Falcuna semliki* Stempffer & Bennett, 1963 : 188, figs.
- \**Falcuna synesia synesia* (Hulstaert), 1924, *Revue zool. afr.* **12** : 118. Fig. Stempffer & Bennett, 1963 : 178, figs.
- \**Falcuna synesia* f. *landana* Stempffer & Bennett, 1963 : 178.
- \**Falcuna synesia fusca* Stempffer & Bennett, 1963 : 179, figs.
- \**Falcuna synesia gabonensis* Stempffer & Bennett, 1963 : 178, figs.

Genus *LIPTENA* Westwood

- Liptena* Westwood, 1851, in Westwood, Doubleday & Hewitson, *Gen. Diurn. Lep.* **2** : plate 77 ; Aurivillius, 1898 : 273 ; 1918 : 329. Type-species : *Liptena undularis* Hewitson, 1866, designated 1959, in Opinion 566, Int. Comm. Zool. Nomenclature.
- Parapontia* Röber, 1892, in Staudinger & Schatz, *Exot. Schmett.* **2** : 280. Type-species : *Liptena undularis* Hewitson, 1866.
- Leucolepis* Karsch, 1893, *Berl. ent. Z.* **38** : 216. Type-species : *Teriomima decipiens* Kirby, 1890.
- Pseudoliptena* (partim) Stempffer, 1946, *Revue fr. Ent.* **13** : 8. Type-species *Pseudoliptena bitje* Stempffer, l.c. ; artefact. See Hemming, 1963, *Entomologist* **96** : 292.

*Eyes* smooth, palpi reaching well beyond frons, 2nd joint long and laterally compressed, bearing adpressed scales, 3rd joint rather long, acuminate; antennae of moderate length, white ringed and with a gradually swollen club flattened apically; fore tarsi of ♂ not segmented, delicately spinose beneath.

*Wing-venation.* Wing venation is not uniform throughout the genus. In *undularis* (Text fig. 244) vein 7 on the fore wing ends on the outer margin slightly below the apex, veins 3 and 4 on the hind wing arise from a short common stalk. This is the position in a number of species, e.g. *xanthostola*, *evanescens*, *flavicans*, *rochei*, *undina*, *fulvicans*, *eukrines*, *homeyeri despecta*, *modesta* etc. In *Liptena decipiens* (Text-fig. 245) vein 7 on the fore-wing similarly ends below the apex, but veins 3 and 4 on the hind wing arise from a common point at the lower angle of the cell, which is the condition also in *alluandi*, *tulliana*, *tullia*, *o-rubrum*, *rubromaculata* etc. The venation of *albomacula*, *ideoides*, and *gordoni* is identical with that of *Falcuna*. In *fatima* and *submacula* vein 7 of the fore wing terminates at the apex.

However, the systematic divisions which could be established on the basis of these slight differences in wing venation in no way correspond with those based on the characters of the ♂ genitalia, which in my opinion are far more important and significant. Neither do they correspond with the divisions which could more easily be made on such obvious characters as colour, e.g. black and white, yellow, brown or black species. For this reason I consider Karsch's *Leucolepis* (type *decipiens*) to be merely a synonym of *Liptena*.

*Male genitalia* (Text-fig. 38, *Liptena undularis*). Uncus crescentic with a shallow depression on the posterior distal margin; subunci long, curved and swollen midway; tegumen oval; vinculum rather broad and produced to form a very long spatulate saccus, directed caudad and

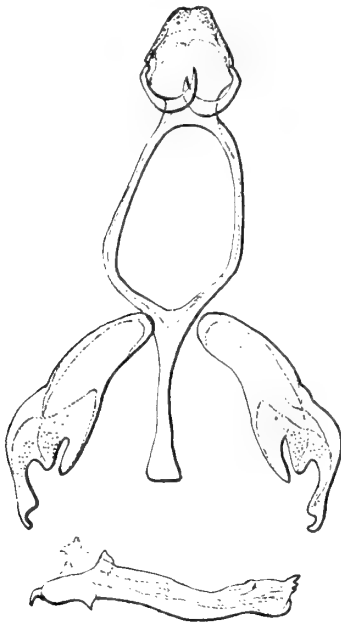


FIG. 38. *Liptena (Liptena) undularis* (Hewitson), ♂ genitalia.



FIG. 39. *Liptena (Liptena) homeyeri* Dewitz, ♂ genitalia.



bearing at its extremity a tuft of large scales ; lower fultura small, sheathing the base of the penis ; valves rather long, the two processes widely separate apically, the upper one much the longer and ending in a small hook ; penis elongate, subcylindric, only slightly curved ; uncus and distal portion of valves pilose.

Not all the species usually placed in *Liptena* conform to a uniform pattern of male genitalia. One can tentatively establish groups and subgroups of species based more or less on these organs :—

A. Dorsum (of genitalia) and valves as in *undularis* :—

a. penis elongate, subcylindrical :—

*undularis*, *homeyeri* (Text-fig. 39), *ferrymani* (Text-fig. 40), *eukrines*, *subvariegata*, *batesana*.

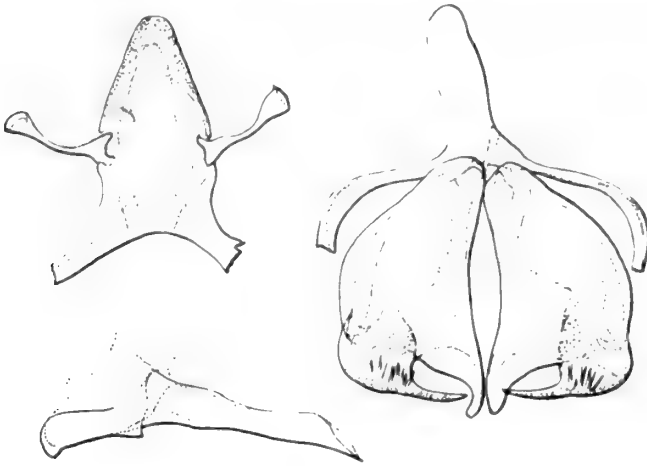


FIG. 40. *Liptena (Liptena) ferrymani* (Smith & Kirby), ♂ genitalia.

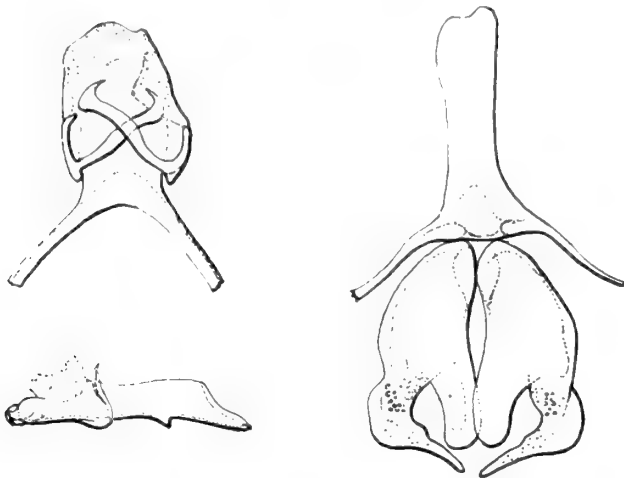


FIG. 41. *Liptena (Liptena) fatima* (Kirby), ♂ genitalia.

- b. penis short, stout, sometimes with a tooth on the lower lip :—  
*fatima* (Text-fig. 41), *decipiens* (Text-fig. 42), *alluaudi*, *submacula*, *xanthostola*, *undina*, *evanescens*.
- c. penis long, the tip more or less delated :—  
*albomaculata* (Text-fig. 43), *o-rubrum* (Text-fig. 44), *nigromarginata*, *opaca*, *septistrigata*.

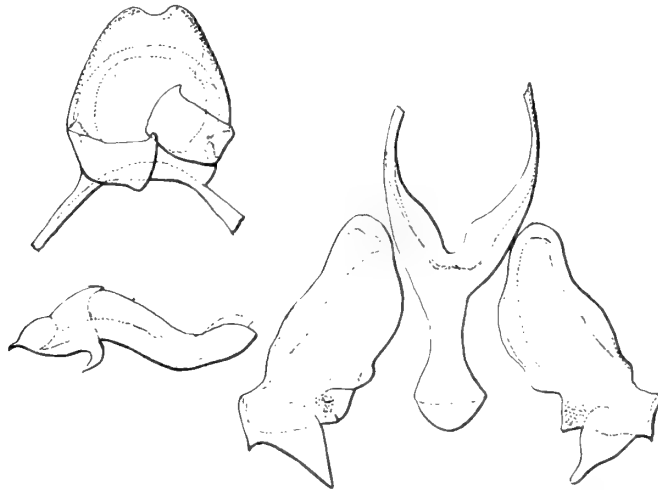


FIG. 42. *Liptena (Liptena) decipiens* (Kirby), ♂ genitalia.

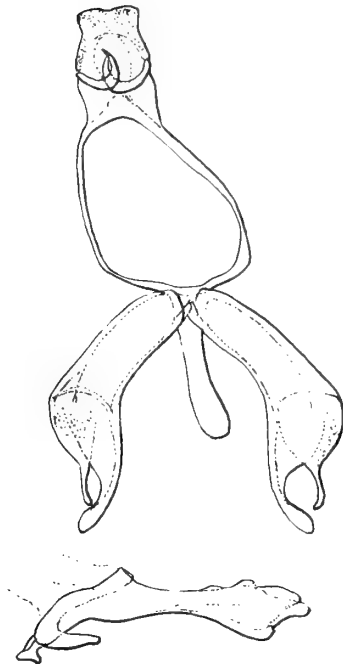


FIG. 43. *Liptena (Liptena) albomaculata* Hawker Smith, ♂ genitalia.

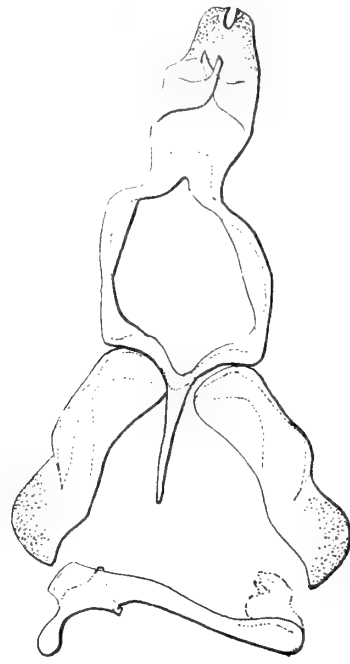


FIG. 44. *Liptena (Liptena) o-rubrum* (Holland), ♂ genitalia.

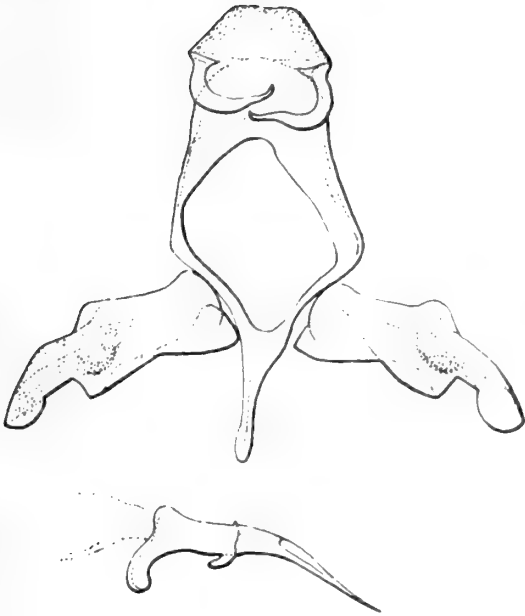


FIG. 45. *Liptena (Liptena) modesta* (Kirby), ♂ genitalia.

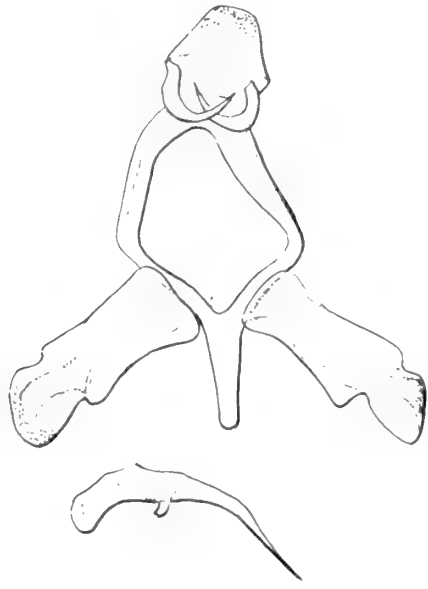


FIG. 46. *Liptena (Liptena) helena* (Druce), ♂ genitalia.

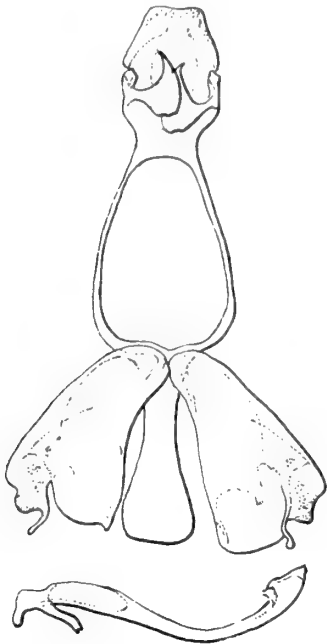


FIG. 47. *Liptena (Liptena) flavicans* (Smith & Kirby), ♂ genitalia.

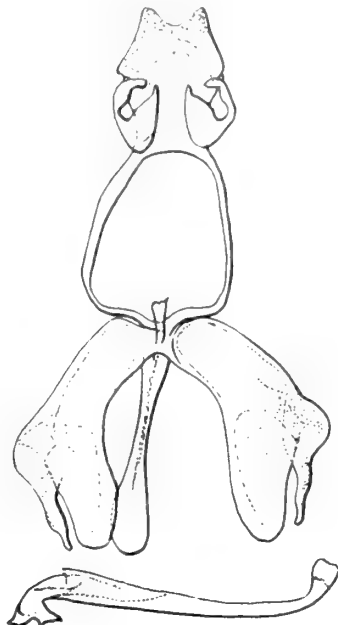


FIG. 48. *Liptena (Liptena) similis* (Kirby), ♂ genitalia.

- d. penis ending in a tapering point :—  
*modesta*, (Text-fig. 45), *helena* (Text-fig. 46), *despecta*, *catalina*, *hapale*,  
*augusta*, *rubromacula*.
- e. penis very long, subcylindrical, strongly curved :—  
*flavicans* (Text-fig. 47), *similis* (Text-fig. 48), *rochei*, *fulvicans*, *durbania*.
- B. Uncus subrectangular, the distal margin deeply excised ; two pairs of subunci ;  
penis long, feebly curved :—  
*tullia* (Text-fig. 49), *tulliana* (Text-fig. 50).
- C. Dorsal structures greatly reduced, feebly sclerotized, subtriangular and rounded  
above, attached directly to the vinculum ; no subunci ; valves oblong, the  
lower processes united basally ; penis long, tapering gradually, apically bulbous  
and with a stout hook. Dorsum smooth, the ends of the valves moderately  
pilose :  
*ideoides* (Text-fig. 51, ventral aspect), *gordoni* (Text-fig. 52, lateral view),  
*infima*, *otlauga*, *ferruginea*.

A general revision of the genus *Liptena* auctorum would be most valuable ; I have not been able to undertake it myself as it has not yet been possible for me to examine all the species so far described, which alone would have permitted me to draw

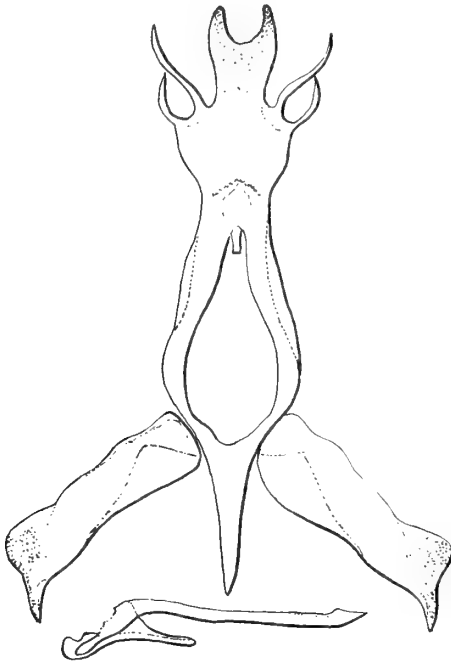


FIG. 49. *Liptena (Liptena) tullia*  
 (Staudinger), ♂ genitalia.



FIG. 50. *Liptena (Liptena) tulliana*  
 Smith, ♂ genitalia.

definite conclusions. However, one can say at once that the species included in groups B and C ought to be excluded from the genus *Liptena*, the genitalia being of a type plainly different from those of *undularis*.

LIST OF SPECIES OF *Liptena* (*Liptena*)

- \**Liptena albicans* Cator, 1904. Fig. Aurivillius in Seitz, 1914-25.
- \**Liptena albomacula* Hawker Smith, 1933, *Stylops* 2 : 7.  
*Liptena albula* (H. H. Druce), see *simplicia*.
- \**Liptena alluaudi* Mabille, 1890. Fig. genitalia, Stempffer, 1957, *Bull. Inst. fr. Afr. noire* 19 : 213.  
*Liptena amabilis* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1181, fig.
- \**Liptena augusta* Suffert, 1904. Fig. H. H. Druce, 1910 ; genitalia, Stempffer, 1957 *Bull. Inst. fr. Afr. noire* 19 : 214.  
*Liptena bakeriana* (Cator), see *gordoni*.
- Liptena bassae* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 390.  
*subpunctata* Bethune Baker, 1906 (nom. praeoc).
- Liptena batesana* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 390.
- Liptena bolivari* Kheil, 1905.
- \**Liptena catalina* Smith & Kirby, 1887.
- Liptena citronensis* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 389.
- Liptena confusa* Aurivillius, 1898.
- \**Liptena congoana* Hawker Smith, 1933, *Stylops* 2 : 9.  
*Liptena daemon* H. H. Druce, see *o-rubrum*.

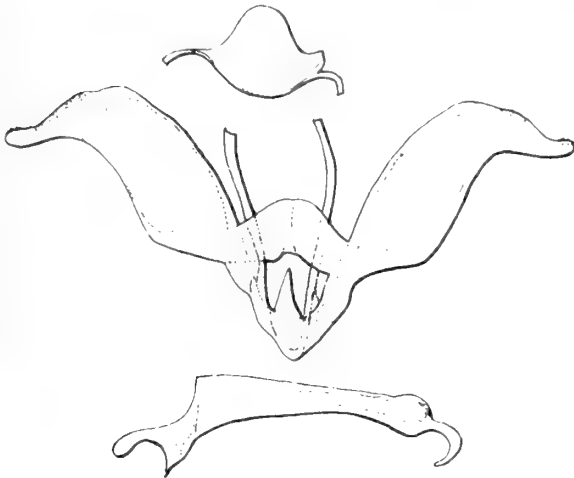


FIG. 51. *Liptena* (*Liptena*) *ideoides* Dewitz, ♂ genitalia.

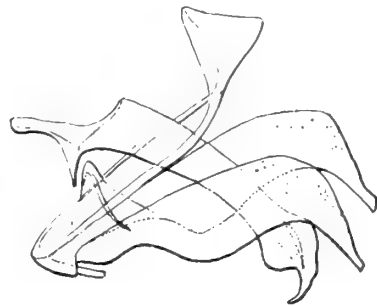


FIG. 52. *Liptena* (*Liptena*) *gordoni* (Druce), ♂ genitalia of type.

- Liptena decempunctata* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1187.
- \**Liptena decipiens* (Kirby), 1890, (Sept.). Fig. Smith & Kirby, 1891.  
*leucostola* Holland, 1890, (Dec.).
- \**Liptena decipiens cameroona* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 389.
- \**Liptena despecta* (Holland), 1890. Fig. Aurivillius in Seitz, 1914-25.  
*modestissima* Rebel, 1914.
- \**Liptena durbania* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (9) 16 : 189.  
*rectifascia* Hawker Smith, 1933.
- Liptena eketi* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 391.
- Liptena erycinoides* (Smith & Kirby), see *helena*.
- Liptena eukrinaria* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 391.
- \**Liptena eukrines* H. H. Druce, 1905.  
*Liptena eukrines obsoleta* Dufrane, 1953, *Bull. Annl. Soc. R. ent. Belg.* 89 : 49.
- Liptena eukrinoides* Talbot, 1937, *Trans. R. ent. Soc. Lond.* 86 : 64, fig.
- \**Liptena evanescens* (Kirby), 1887. Fig. Smith & Kirby, 1887.  
*xanthis* (Holland), 1890.
- \**Liptena fatima* (Kirby), 1890. Fig. Smith & Kirby, 1891.
- \**Liptena ferruginea* Schultze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1184, fig.
- \**Liptena ferrymani ferrymani* (Smith & Kirby), 1891.
- \**Lipena ferrymani bigoti* Stempffer, 1964 : 1233.
- \**Liptena flavicans flavicans* (Smith & Kirby), 1891.
- \**Liptena flavicans aequatorialis* Stempffer, 1956 : 8, fig.
- \**Liptena flavicans katera* Stempffer, 1956 : 8, fig.
- \**Liptena flavicans oniens* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 72, fig.
- \**Liptena flavicans praeusta* Schultze, 1916, *Arch. Naturgesch.* 82, A3 : 38.
- \**Liptena fulvicans* Hawker Smith, 1933, *Stylops* 2 : 8.  
*Liptena girthii* Dewitz, see *ideoides*.
- \**Liptena gordonii* (H. H. Druce), 1903. Fig. Lathy, 1903.  
*bakeriana* (Cator), 1904.
- \**Lipena hapale* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 72, fig.
- \**Liptena helena* (H. H. Druce), 1888. Fig. Smith & Kirby, 1890.  
*erycinoides* (Smith & Kirby), 1890.
- \**Liptena homeyeri* Dewitz, 1884.
- \**Liptena hulstaerti* Hawker Smith, 1926, *Revue zool. afr.* 14 : 239.
- \**Liptena ideoides* Dewitz, 1886.  
*girthii* Dewitz, 1886.
- \**Liptena infima* (Smith & Kirby), 1890.  
*Liptena inframacula* Hawker Smith, 1933, *Stylops* 2 : 7.
- Liptena intermedia* Grünberg, 1910.
- Liptena jacksoni* Stempffer, see *nigromarginata*.
- \**Liptena kelle* Stempffer, 1964 : 1231, fig.

- Liptena latruncularia* (Holland), see *modesta*.  
*Liptena leucostola* (Holland), see *decipiens*.  
 \**Liptena modesta* (Kirby), 1890 (Sept.). Fig. Smith & Kirby, 1892.  
     *latruncularia* (Holland), 1890 (December).  
*Liptena modestissima* Rebel, see *despecta*.  
*Liptena mwagensis* Dufrane, 1953, *Bull. Anns Soc. R. ent. Belg.* **89** : 49.  
 \**Liptena nigromarginata* Stempffer, 1961 : 43.  
     *jacksoni* Stempffer, 1953 (nom. praeoc.).  
*Liptena occidentalis* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 390.  
*Liptena ochrea* Hawker Smith, 1943, *Stylops* **2** : 8.  
*Liptena olombo* (Holland), 1890.  
*Liptena opaca opaca* (Kirby), 1890. Fig. Smith & Kirby, 1892.  
 \**Liptena opaca immaculata* Grünberg, 1910.  
 \**Liptena o-rubrum o-rubrum* (Holland), 1890. Fig. Aurivillius in Seitz,  
     1914-25.  
     *daemon* H. H. Druce, 1910.  
 \**Liptena o-rubrum teroana* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 72.  
*Liptena o-rubrum tripunctata* (Smith & Kirby), 1894.  
 \**Liptena otlauga* (Smith & Kirby), 1890.  
*Liptena perobscura* H. H. Druce, 1910.  
*Liptena praestans praestans* (Smith & Kirby), 1910.  
*Liptena praestans congoensis* Schultze, 1823, *Ergebn. 2te D. Zent. Afr. Exped.*  
     1910-11, **1** : 1181.  
*Liptena praestans kamitugensis* Dufrane, 1945, *Bull. Anns Soc. R. ent. Belg.*  
     **81** : 118.  
*Liptena rectifascia* Hawker Smith, see *durbania*.  
 \**Liptena rochei* Stempffer, 1951, *Bull. Soc. ent. Fr.* **1951** : 66, fig.  
 \**Liptena rubromacula rubromacula* Hawker Smith, 1933, *Stylops* **2** : 9.  
 \**Liptena rubromacula jacksoni* Carpenter, 1934, *Proc. R. ent. Soc. Lond.* **9** : 12.  
     *sauberi* Schultze, 1912. Fig. Aurivillius in Seitz, 1914-25.  
     *semilimbata* (Mabille), see *simplicia*.  
 \**Liptena septistrigata* (Bethune Baker), 1903.  
 \**Liptena similis* (Kirby), 1890. Fig. Smith & Kirby, 1892.  
 \**Liptena simplicia* Möschler, 1888.  
     *albula* (H. H. Druce), 1888 (October) ; *semilimbata* (Mabille), 1890.  
 \**Liptena submacula* Lathy, 1903.  
     *subpunctata* Bethune Baker, see *bassae*.  
*Liptena subsuffusa* Hawker Smith, 1933, *Stylops* **2** : 7.  
*Liptena subundularis* Staudinger, 1891. Fig. Smith & Kirby, 1892.  
*Liptena subvariegata subvariegata* Smith & Kirby, 1890.  
*Liptena subvariegata aliquantum* H. H. Druce, 1910.  
*Liptena tricolora* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) **16** : 188.  
 \**Liptena tullia* (Staudinger), 1891. Fig. Aurivillius, 1898.  
 \**Liptena tulliana* Smith, 1901.

- Liptena turbata* (Kirby), 1890. Fig. Smith & Kirby, 1891.  
 \**Liptena undina* (Smith & Kirby), 1894.  
 \**Liptena undularis* Hewitson, 1866.  
*Liptena xantha* (Smith), see *xanthostola*.  
*Liptena xanthis* (Holland), see *evanescens*.  
 \**Liptena xanthostola* (Holland), 1890. Fig. Aurivillius in Seitz, 1914-25.  
*xantha* (Smith), 1901.  
*Liptena xanthostola coomassiensis* Hawker Smith, 1933, *Stylops* 2 : 8.  
*Liptena yukadumae* Schultze, 1916, *Arch. Naturgesch.* 82 A 3 : 38. Fig. Schultze, 1923.

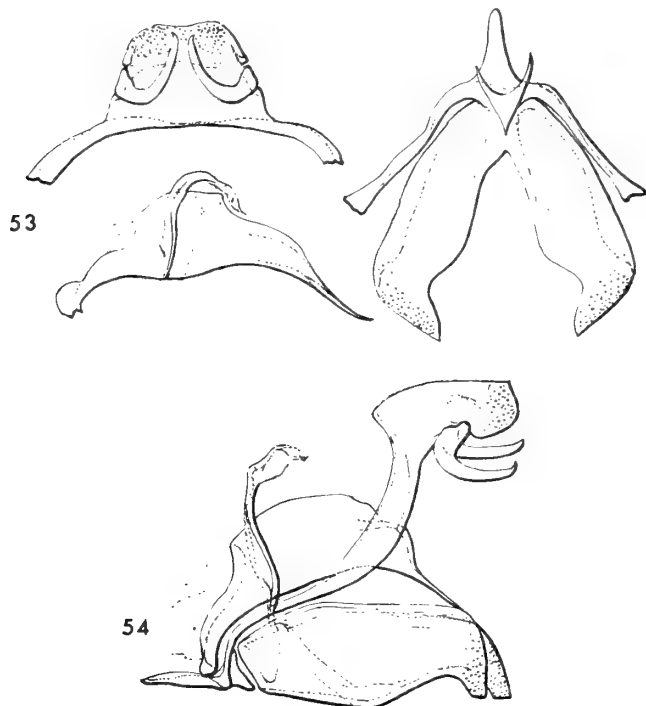
### LIPTENA (TETRARHANIS) Karsch

*Tetrarhanis* Karsch, 1893, *Berl. ent. Z.* 38 : 217. Type-species : *Liptena ilma* Hewitson, 1873, by monotypy.

*Lectiles* Birket Smith, 1960, *Bull. inst. fr. Afr. noire.* (A) 22 : 1968. Type-species *Lectiles collitorum* B. Smith by monotypy.

Eyes, palpi, antennae and legs as in other species of *Liptena*.

Wing venation (Text-fig. 246). On the fore wings vein 7 ends at the apex. On the hind



FIGS 53, 54. *Liptena (Tetrarhanis) ilma* Hewitson, ♂ genitalia.



wings veins 3 and 4 are narrowly separate at their points of origin, and vein 7 arises from the upper angle of the cell and not from its anterior margin as in other species of *Liptena*.

*Male genitalia* (Text-fig. 53, ventral aspect ; Text-fig. 54, lateral aspect). Uncus with posterior margin slightly depressed ; subunci rather long, evenly curved ; tegumen large ; vinculum rather broad, with a short saccus ; lower fultura strongly developed, surrounding the middle of the penis ; valves oblong ; penis of very characteristic form, narrow at the base, swollen and massive in the middle, ending in a slender point. Uncus and apices of valves pilose.

The male genitalia in *Tetrarhanis* are of a uniform type, except that in *L. schoutedeni* the tip of the penis is bifid. There is agreement here between divisions founded on wing venation and genitalia. I consider *Tetrarhanis* therefore to be a valid subgenus.

LIST OF SPECIES OF *Liptena* (*Tetrarhanis*)

- Liptena* (*Tetrarhanis*) *collitorum* (Birket Smith), (as *Lectiles* sp.), see *schoutedeni*.
- \**Liptena* (*Tetrarhanis*) *diversa diversa* Bethune Baker, 1904. Genitalia, Stempffer, 1964 : 1236, fig.
- \**Liptena* (*Tetrarhanis*) *diversa ilala* Riley, 1929, *Trans. ent. Soc. Lond.* **1929** : 493.
- \**Liptena* (*Tetrarhanis*) *etoumbi* Stempffer, 1964 : 1236, fig.
- \**Liptena* (*Tetrarhanis*) *ilma ilma* Hewitson, 1873. Genitalia, Berger, 1954, *Annl's Mus. r. Congo belge, Zool.* **1**.
- \**Liptena* (*Tetrarhanis*) *ilma daltoni* Poulton, 1929, *Trans. ent. Soc. Lond.* **1929** : 493, fig.
- \**Liptena* (*Tetrarhanis*) *ilma lathyi* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 82, fig.
- \**Liptena* (*Tetrarhanis*) *ilma ugandae* Stempffer, 1964 : 1234, fig.
- Liptena* (*Tetrarhanis*) *laminites* Clench, 1965, *Butt. Liberia* : 30, figs.
- \**Liptena* (*Tetrarhanis*) *nubifera* H. H. Druce, 1910. Genitalia, Stempffer, 1961 : 43, fig.
- \**Liptena* (*Tetrarhanis*) *ogojae* Stempffer, 1961 : 44, fig.
- \**Liptena* (*Tetrarhanis*) *onitshae* Stempffer, 1962 : 1146, fig.
- \**Liptena* (*Tetrarhanis*) *rougeoti* Stempffer, 1954, *Bull. Soc. ent. Fr.* **1954** : 92, fig.
- \**Liptena* (*Tetrarhanis*) *schoutedeni* Berger, 1954, *Annl's Mus. R. Congo belge, Zool.* **1**, 1954 : 308, fig.
- Lectiles collitorum* Birket Smith, 1960.
- \**Liptena* (*Tetrarhanis*) *simplex* Aurivillius, 1895. Genitalia, Stempffer, 1964 : 1235.
- \**Liptena* (*Tetrarhanis*) *souanke* Stempffer, 1962 : 1148, fig.
- \**Liptena* (*Tetrarhanis*) *stempfferi stempfferi* Berger, 1954, *Annl's Mus. R. Congo belge, Zool.* **1**, 1954 : 307, fig.
- \**Liptena* (*Tetrarhanis*) *stempfferi kigezi* Stempffer, 1956 : 8, fig.
- \**Liptena* (*Tetrarhanis*) *symplocus* Clench, 1965, *Butt. Liberia* : 302, figs.

Genus *MICROPENTILA* Aurivillius

*Micropentila* Aurivillius, 1895, *Ent. Tidsk.* **16** : 202 ; 1898 : 281 ; 1920 : 339. Type-species : *Liptena adelgitha* Hewitson, 1874, by original designation.

*Eyes* glabrous ; palpi of medium length, shorter than in *Liptena*, the second segment clothed below with stiff hair or hair-scles ; third segment subconical ; antennae of medium length reaching beyond the tip of the discal cell, the club oval, short, sharply defined ; legs black, ringed with white, the ♂ fore tarsi short, unsegmented, finely spinose beneath.

*Wing shape.* Fore wing costa rather strongly curved, the outer margin convex ; hind wing oval with a rather well marked anal angle.

*Venation* (Text-fig. 247). Fore wing with 12 veins ; the stem of 7 + 8 + 9 arises from the upper angle of the cell or very shortly before it ; hind wing, 3 and 4 free from lower angle of cell, or very shortly stalked, 7 a little before the upper angle of cell.

*Male genitalia* (Text-fig. 55). Uncus divided into two subtriangular processes with rounded extremities separated by a deep indentation ; subunci long slender and curved ; tegumen large ; vinculum with a slender saccus ; valves oblong and tapering evenly to a blunt apex ; penis basally bulbous and sheathed by a small inferior fultura, then cylindrical, dilated and notched at the tip ; uncus clothed in long hair, only the ends of the valves slightly pilose.

In collaboration with N. H. Bennett of the British Museum (N.H.) I have recently published a revision of the genus *Micropentila* (1965 : 397-434, 31 figs, 4 plates), in which the genitalia of almost all the known species are figured, and to which reference should be made. Not all the species have genitalia like those of *M. adelgitha*. As a rule the uncus is not so deeply divided, the saccus is sometimes broadly spatulate, and the penis in particular shows many variations. According to the characters of the penis we have divided the genus into nine sections :—

Section A Penis bulbous at base, excised apically :—

*adelgitha, subplagata, souanke*

Section B Penis long and bent ; valves as in some *Liptena* :—

*fulvula*

Section C Penis long, cylindrical, bent at right angles near the base, its apex rolled back :—

*adelgunda* (Text-fig. 56), *bitjeana, dorothea, gabunica*

Section D Penis rather long, ending in a fine point :—

*brunnea* (Text-fig. 57), *victoriae, kateraе, flavopunctata, jacksoni, bakotae, nigeriana, mpigi, fontainei, fuscula, ogojae, kelleana.*

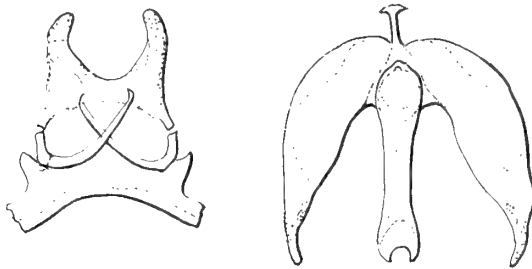


FIG. 55. *Micropentila adelgitha* (Hewitson), ♂ genitalia.

- Section E Penis shorter and stouter than in Section D :—  
*alberta, mabangi*
- Section F Penis long, slender, strongly curved :—  
*cingulum, ugandae*
- Section G Penis long, only gently curved :—  
*sankuru*
- Section H Penis short, its extremity bulbous and bifid :—  
*katangana, cherereti*
- Section I Penis short, its tip broadly concave :—  
*bunyoro.*

In spite of the very uniform external facies throughout, the genus *Micropentila*, it would seem on this showing, has a rather mixed phylogeny.



FIG. 56. *Micropentila adelgunda* (Staudinger), ♂ genitalia.

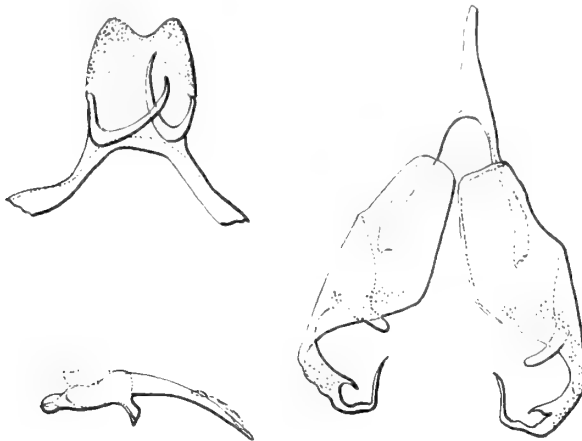


FIG. 57. *Micropentila brunnea* (Kirby), ♂ genitalia.

LIST OF SPECIES OF *Micropentila*

- \**Micropentila adalgitha* (Hewitson), 1874. Fig. Smith & Kirby, 1892. Fig. genitalia, Stempffer & Bennett, 1965 : 402.  
*moneta* (Mabille), 1890.
- \**Micropentila adalgunda* (Staudinger), 1891. Fig. Smith & Kirby, 1892. Fig. genitalia, Stempffer & Bennett, 1965 : 406.
- \**Micropentila alberta* (Staudinger), 1891. Fig. Smith & Kirby, 1892. Fig. genitalia, Stempffer & Bennett, 1965 : 424.
- \**Micropentila bakotae* Stempffer & Bennett, 1965 : 416, fig. and fig. genitalia.
- \**Micropentila bitjeana* Stempffer & Bennett, 1965 : 407, fig. and fig. genitalia.
- \**Micropentila brunnea* (Kirby), 1887. Fig. Smith & Kirby, 1888. Fig. genitalia, Stempffer & Bennett, 1965 : 410.  
*Micropentila brunnea centralis* Bennett, 1966, *Entomologist* **99** : 186, fig.
- \**Micropentila bunyoro* Stempffer & Bennett, 1965 : 432, fig. and fig. genitalia.  
*Micropentila catocata* Strand, 1914. *Arch. Naturgesch.* **80** A 2 : 155.
- \**Micropentila cherereti* Stempffer & Bennett, 1965 : 431, fig. and fig. genitalia.
- \**Micropentila cingulum* H. H. Druce, 1910. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 425.
- \**Micropentila dorothea* Bethune Baker, 1903. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 407.
- \**Micropentila flavopunctata* Stempffer & Bennett, 1965 : 414, fig. and fig. genitalia.
- \**Micropentila fontainei* Stempffer & Bennett, 1965 : 419, fig. and fig. genitalia.
- \**Micropentila fulvula* Hawker Smith, 1933, *Stylops* **2** : 9. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 405.
- \**Micropentila fuscula* Grose Smith, 1898. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 420.
- \**Micropentila gabunica* Stempffer & Bennett, 1965 : 409, fig. and fig. genitalia.
- \**Micropentila jacksoni* Talbot, 1937, *Trans. R. ent. Soc. Lond.* **86** : 61. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 415.
- \**Micropentila katangana* Stempffer & Bennett, 1965 : 430, fig. and fig. genitalia.
- \**Micropentila katerae* Stempffer & Bennett, 1965 : 412, fig. and fig. genitalia.
- \**Micropentila kelleana* Stempffer & Bennett, 1965 : 422, fig. and fig. genitalia.
- \**Micropentila mabangi* Bethune Baker, 1904. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 424.  
*Micropentila moneta* (Mabille), see *adalgitha*.
- \**Micropentila mpigi* Stempffer & Bennett, 1965 : 418, fig. and fig. genitalia.
- \**Micropentila nigeriana* Stempffer & Bennett, 1965 : 417, fig. and fig. genitalia.
- \**Micropentila ogojae* Stempffer & Bennett, 1965 : 421, fig. and fig. genitalia.
- \**Micropentila sankuru* Stempffer & Bennett, 1965 : 428, fig. and fig. genitalia.
- \**Micropentila souanke* Stempffer & Bennett, 1965 : 403, fig. and fig. genitalia.
- \**Micropentila subplagata* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) **16** : 189. Fig. genitalia, Stempffer & Bennett, 1965 : 402.  
*Micropentila triangularis* Aurivillius, 1895. Fig. Aurivillius in Seitz, 1914-25.

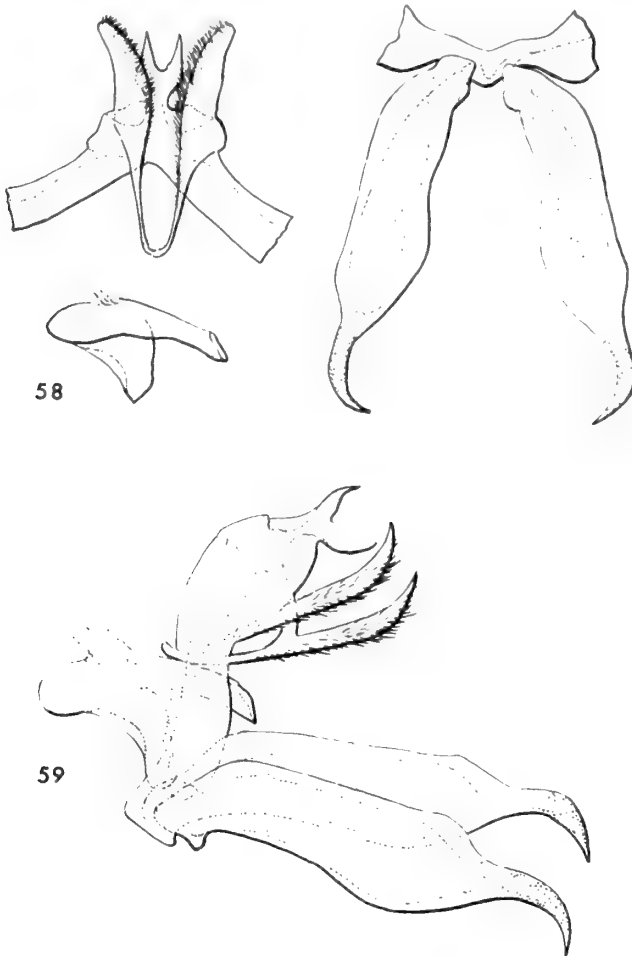
\**Micropentila ugandae* Hawker Smith, 1933, *Stylops* 2 : 10. Fig. and fig. genitalia, Stempffer & Bennett, 1965 : 427.

\**Micropentila victoriae* Stempffer & Bennett, 1965 : 411, fig. and fig. genitalia.

Genus *ERESINOPSIDES* Strand

*Eresinopsides* Strand, 1911, *Arch. Naturgesch.* 77 : 193 ; Aurivillius, 1920 : 340. Type-species : *Eresinopsides bichroma* Strand, by original designation.

Eyes smooth ; palpi long, projecting well beyond the frons, second segment oval, laterally compressed, clothed with large scales, third segment long, slender, cylindrical ; antennae moderately long, delicate, with a well differentiated fusiform club ; fore leg of ♂ with tibia slightly shorter than femur, tarsus unsegmented, bearing fine hairs below ; mid and hind legs with tibiae a little shorter than femora, slightly dilated.



FIGS 58-59. *Eresinopsides bichroma* Strand, ♂ genitalia.

*Wing venation* (Text-fig. 248). Fore wing with 11 veins only ; 6 and 7 arise from a common stem from the upper angle of the cell ; hind wing : 7 stalked on 6.

*Male genitalia* (Text-fig. 58, ventral view; Text-fig. 59, side view). Uncus bifid, shaped like a crescent with pointed horns ; tegumen consists of a small, narrow dorsal strip ; two large lobes, which probably represent the subunci, are attached to the tegumen by their middle portions, on either side of the uncus, and their hinder parts are united by a membrane, the whole of their surface being shortly pilose and the internal edge bearing long spines ; vinculum wide, without saccus ; lower fultura closely sheathing the penis ; valves long and narrow, their distal portion falcate with a pointed apex ; penis oblong, obliquely truncated at apex ; uncus and apices of valves shortly pilose.

The genitalia of *E. bichroma* have a very peculiar structure ; they in no way resemble those of species of *Eresina*, but are somewhat analogous to those of *Baliochila minima* Hawker-Smith.

#### LIST OF SPECIES OF *Eresinopsides*

\**Eresinopsides bichroma bichroma* Strand, 1911.

*staphyla* (Hulstaert), 1924 (as *Pseuderesia* sp.).

*Eresinopsides bichroma jefferyi* Stempffer, 1950, *Revue fr. Ent.* 17 : 135.

*Eresinopsides staphyla* (Hulstaert), see *bichroma*.

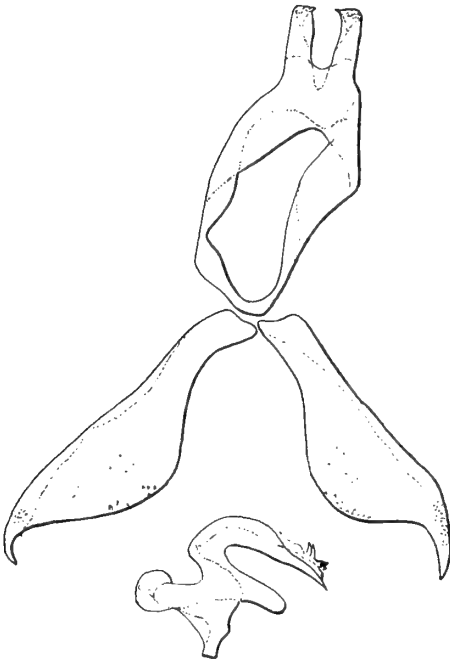


FIG. 60. *Eresina corynetes* (Kirby & Smith), ♂ genitalia of type.

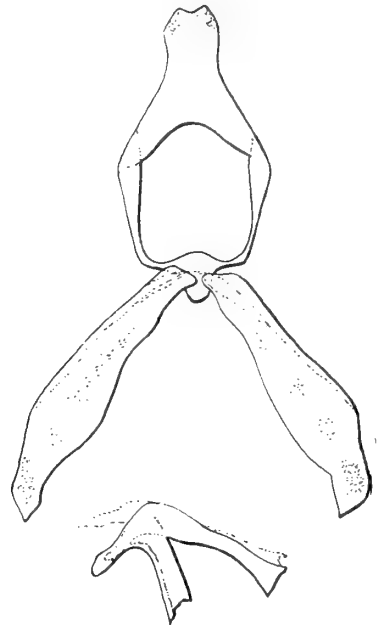


FIG. 61. *Eresina toroensis* Joycey & Talbot, ♂ genitalia.

Genus **ERESINA** Aurivillius

*Eresina* Aurivillius, 1898, *Rhopalocera Aethiopica* : 282 ; 1920 : 341. Type-species : *Durbania corynetes* Smith & Kirby, by original designation.

*Eyes* smooth ; palpi long, extending beyond the frons, second segment bearing scales and bristly hairs, third segment rather long, subcylindrical ; antennae of moderate length, barely half the length of costa, the club distinct, oval, flattened ; legs short, scaly, anterior tarsi of ♂ unsegmented, bearing delicate spines below ; hind tibiae gently curving, thickened and somewhat compressed.

*Wing shape.* The hind margin of the hind wings is slightly scalloped.

*Wing venation* (Text-fig. 249 *corynetes*). Very characteristic : on the fore wing vein 6 arises from the upper angle of the cell, 7 arises from 6 and ends at the apex, 8 stalked on 7, 9 absent, 10 also branching from 6 about midway between the upper angle of cell and the origin of 7, 11 separate from the anterior margin of cell.

Wing venation in *Eresina* is not entirely uniform. In some species vein 10 arises nearer to the upper angle of the cell and sometimes actually from this angle, but even in these species the ♂ genitalia are quite similar to those of the other species.

*Male genitalia* (Text-fig. 60). Uncus composed of two subrectangular processes, separated by a deep division, each bearing a sort of triangular crest at an oblique angle ; no subunci ; tegumen rather big ; vinculum broad dorsally ; inferior fultura with a short peduncle fused to the extreme base of the valves and tightly enclosing base of the penis ; valves oblong, falcate at the apex (slightly asymmetric in the holotype of *corynetes*) ; penis doubly curved (S-shaped) with a very slender tip and distally widely open dorsally, vesica bearing two short spines and other smaller ones. Apex of uncus covered with rather long fine hair, extremity of the valves lightly pilose and their ventral margins shortly but densely pilose.

In most species of *Eresina* the male armature is as in *corynetes*, i.e. with a deeply divided uncus and an S-shaped penis. In *toroensis* (Text-fig. 61) and *conradti* the uncus is only shallowly divided ; in *crola*, *fusca* and *pseudofusca* the penis is simply curved and in *conradti* its extremity is bifid.

LIST OF SPECIES OF *Eresina*

- \**Eresina bergeri* Stempffer, 1956 : 12, figs.
- \**Eresina bilinea* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 73, figs.
- \**Eresina conradti* Stempffer, 1956 : 27, figs.
- \**Eresina corynetes* (Smith & Kirby), 1890.
- \**Eresina crola* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 73, figs.
- \**Eresina fontainei* Stempffer, 1956 : 18, figs.
- \**Eresina fusca* (Cator), 1904. Fig. Stempffer, 1956.
- \**Eresina jacksoni* Stempffer, 1961 : 48, figs.
- \**Eresina katangana* Stempffer, 1956 : 15, figs.
- \**Eresina katera* Stempffer, 1962 : 1155, figs.
- \**Eresina likouala* Stempffer, 1962 : 1149, figs.
- \**Eresina maesseni* Stempffer, 1956 : 14, figs.
- \**Eresina masaka* Stempffer, 1962 : 1152, figs.
- \**Eresina pseudofusca* Stempffer, 1961 : 47, figs.
- \**Eresina rougeoti* Stempffer, 1956 : 19, figs.

\**Eresina saundersi* Stempffer, 1956 : 17, figs.

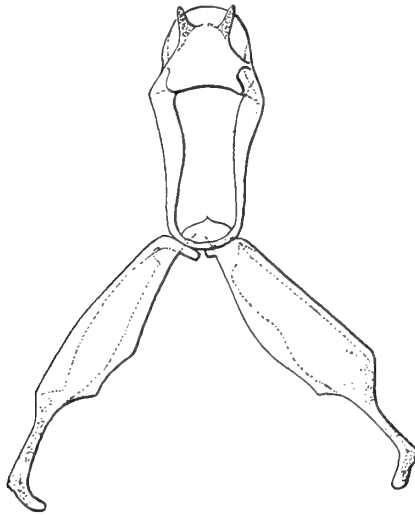
\**Eresina theodori* Stempffer, 1956 : 21, figs.

\**Eresina toroensis* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* 1 : 83, figs.

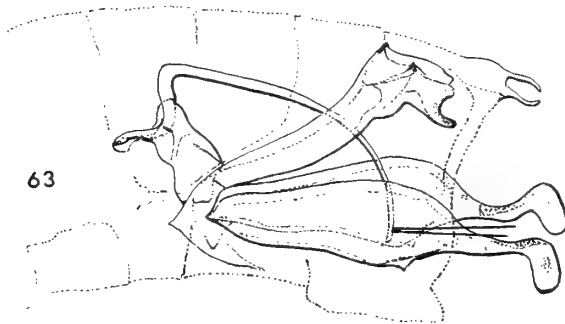
Genus *TOXOCHITONA* Stempffer

*Toxochitona* Stempffer, 1956, *Annls Mus. R. Congo belge* 49 : 28. Type-species : *Durbania gerda* Kirby, 1890, by original designation.

*Eresina* Aurivillius, 1898 : 283 ; 1920 : 341 (pro parte).



62



63

FIGS 62-63. *Toxochitona gerda* (Kirby), ♂ genitalia.



*Eyes, palpi, antennae and legs as in Eresina.*

*Wing venation* (Text-fig. 250). Differs little from that of *Eresina* : on the fore wings vein 10 arises from the anterior margin of the cell very slightly before the upper angle.

*Male genitalia* (Text-figs 62, 63). Eighth tergite ends in a sort of small claw ; uncus composed of two small finger-like lightly divergent processes ; no subunci ; tegumen rather large ; pseudotergum (see Bayard, 1933, *Bull. Soc. Fr. Microsc.* 2(4) : 83, 99) well developed but semi-membranous and translucent, so that it is difficult to locate its anterior margin precisely by observation under the microscope ; inferior fultura pedunculate, fused to the base of the valves ; valves oblong, abruptly narrowing just before the extremity which is bent at an angle like a foot ; penis very specialized, strongly curved, slender and including (at its tip) two long needle-like spines.

The remarkable form of the penis in this genus suggested the generic name *Toxochitona*. The armature of *T. sankura* is very similar to that of *gerda*, differing only in the shape of the uncus and the apex of the valves. I do not know the armature of *T. vansomereni*, described on the basis of a unique female and I place it in this genus only on account of its external appearance.

LIST OF SPECIES OF *Toxochitona*

***Toxochitona bitjensis*** (Bethune Baker), see *gerda*.

***Toxochitona gerda gerda*** (Kirby), 1890. Fig. Smith & Kirby, 1892.

*bitjensis* (Bethune Baker), 1926.

***Toxochitona gerda unicolor*** (Aurivillius), 1898.

\****Toxochitona sankuru*** Stempffer, 1961 : 51, figs.

***Toxochitona vansomereni*** (Stempffer), 1953, *Annls Mus. R. Congo belge* 27 : 12.

Genus **ARGYROCHEILA** Staudinger

*Argyrocheila* Staudinger, 1891, *Dt. ent. Z. Iris* 4 : 215 ; Aurivillius, 1898 : 284 ; 1920 : 341.

Type-species : *Argyrocheila undifera* Staudinger, by monotypy.

*Eyes* naked ; palpi small, slender, scarcely reaching beyond the frons ; antennae slender, short, hardly one-third the length of the costa, club distinct, short ; legs annulated, black and white, ♂ fore tarsus unsegmented.

*Wing-shape* ; fore wing in *undifera* deeply lobed at the ends of veins 6, 5 and 4, with the biggest saliant at vein 4. In *inundifera* and *bitje* the outer margin is strongly convex but devoid of lobes.

*Wing venation* (Text-fig. 251). Fore wing with 12 veins ; from the upper angle of the cell there arises a stem from which vein 6 branches, and this stem continues as the common stem of 7 + 8 + 9.

*Male genitalia* (Text-fig. 64). Uncus narrow, trapezoidal, with a slight notch in the distal edge ; no subunci ; tegumen much reduced ; vinculum wide in its tergal portion, narrow in its sternal portion ; inferior fultura fused to the base of the valves and sheathing the base of the penis ; valves oblong, with two sharp teeth at the apex ; penis shaped like an open S, the upper surface widely open at the base ; uncus and apices of valves pilose.

The genital armature of *inundifera* (Text-fig. 65) differs from that of *undifera* in the shape of the uncus which is bifid and formed of two horn-shaped processes,

widely separated at their bases. The armature of *bitje* is very like that of *inundifera*. Although the species of *Argyrocheila* in their peculiar external appearance differ considerably from the species of allied genera, their male genitalia show that they are not very far from *Eresina*.

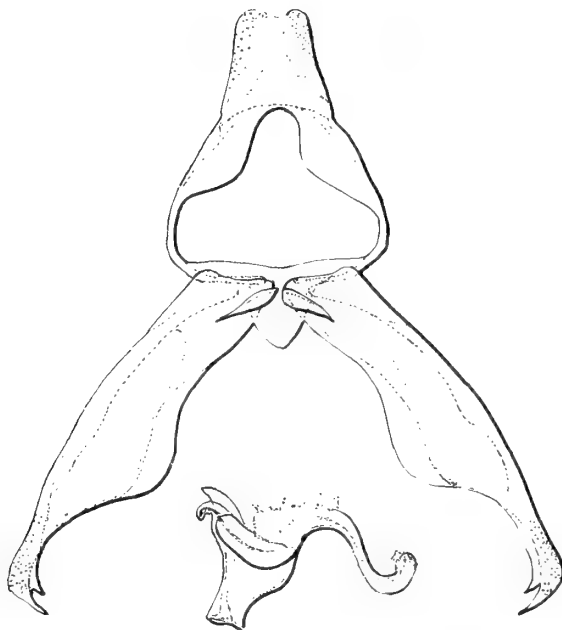


FIG. 64. *Argyrocheila undifera* Staudinger, ♂ genitalia.

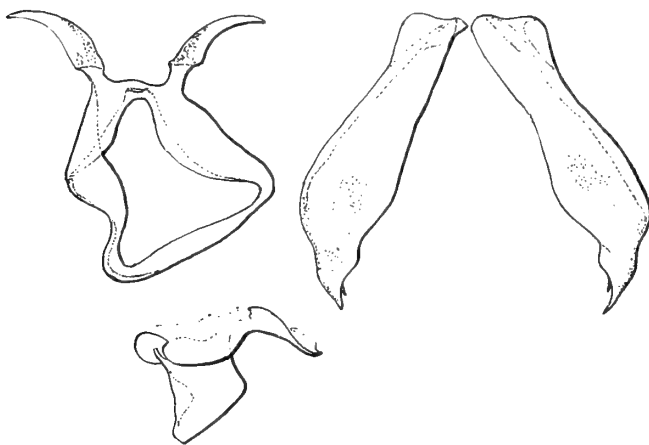


FIG. 65. *Argyrocheila inundifera* Hawker Smith, ♂ genitalia.

LIST OF SPECIES OF *Argyrocheila*

- \**Argyrocheila bitje* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) **16** : 187.
- \**Argyrocheila inundifera* Hawker Smith, 1933, *Stylops* **2** : 10.
- \**Argyrocheila undifera undifera* Staudinger, 1891.
- \**Argyrocheila undifera ugandae* Hawker Smith, 1933, *Stylops* **2** : 10.

Genus *ASLAUGA* Kirby

*Aslauga* Kirby, 1890, *Ann. Mag. nat. Hist.* (6) **6** : 261 ; Aurivillius, 1898 : 284 ; 1920 : 341 (pro parte) ; Bethune Baker, 1924 : 208. Type-species : *Aslauga marginalis* Kirby, 1890 (*Liphyra vininga* Hewitson, 1875), by selection by Bethune Baker, 1924, *Trans. ent. Soc. London* **1924** : 209.

Eyes naked ; palpi divergent, obliquely erect, clothed with adpressed scales, third segment fairly long ; antennae short and thick, segments not much longer than broad, club rounded ; ♂ fore tarsus composed of five distinct segments, with two claws on terminal segment, as in the ♀.

*Wing shape* : shape peculiar ; fore wing slightly falcate, outer margin excised at extremity of vein 6, strongly convex at the extremities of veins 4 and 3 ; hind wing with anal margin concave between the ends of veins 1a and 1b, outer margin concave between 1b and 4, thus forming a blunt tooth at the end of 1b and an angle at the end of 4.

*Wing venation* (Text-fig. 252).

*Male genitalia* (Text-fig. 66). Dorsal elements small in relation to the other parts of the genitalia ; uncus deeply excised at the apex ; no subunci ; tegumen with a median rounded protuberance on the anterior edge ; vinculum very narrow, prolonged to form a strong saccus ; lower fultura composed of two large triangular lobes with pointed apex ; valves elliptical, their lower process short, upper process ending in a long, strong hook ; penis massive, subcylindrical, tapering slightly in its external portion ; vesica armed with numerous cornuti and strong spines ; uncus and apices of valves pilose.

*Aslauga lamborni* (Text-fig. 67). The genitalia have been described by Bethune Baker somewhat inaccurately. Even if it is true that the uncus is only weakly

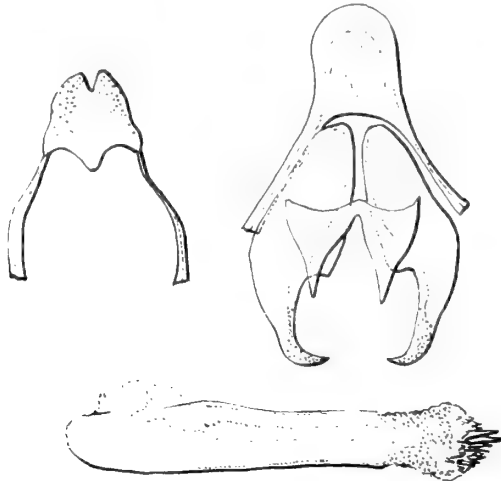


FIG. 66. *Aslauga vininga* (Hewitson), ♂ genitalia.

excised, the manner of the attachment of the valves is the same as in *vininga* and the vinculum is similarly prolonged to form a stout saccus. The ends of the valves are obliquely truncate, with a serrate margin.

In *aura* and *pandora* the uncus is only weakly excised above and the penis is less elongate than in *vininga* and *lamborni*.

The genus *Aslauga* belongs to the sub-family Liphyrinae, sharply characterized by the five-segmented male fore tarsus, the morphology of its pupae and its larvae.

The early stages of *A. vininga* and *A. lamborni* were the subject of the remarkable observations of Dr. Lamborn (1914, *Trans. ent. Soc. Lond.*, **1913** : 446-7) and the pupae of the same species have been described by Eltringham (1922, *Trans. ent. Soc. Lond.* **1921** : 473, pl. 12, figs 4 and 5) and by Bethune Baker (1924 : 214-7, pls 17 to 24).

I give below only a brief summary of these researches. The caterpillars, seen from above, are oblong with the sides sloping downwards and outwards ; the dorsal skin, which is tough and covered with rough tubercles, forms a kind of carapace beneath which the small head can be withdrawn ; the ventral surface is flat. They feed on Coccidae and are cared for by ants of the genus *Crematogaster*, which erect around the caterpillars small shelters made of particles of bark and other vegetable debris. The carapace enables the caterpillars to withstand any casual attacks from the ants.

The chrysalis bears branched hairs of a complex structure ; some are like the flower of a water-lily with a long pistil, others like small balls on a short stem. Eltringham calls these hairs " chitinanthus ".

The caterpillar of *A. purpurascens* Holland has been described by T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.*, **86** : 207) ; it also has a kind of carapace and feeds on Membracidae.

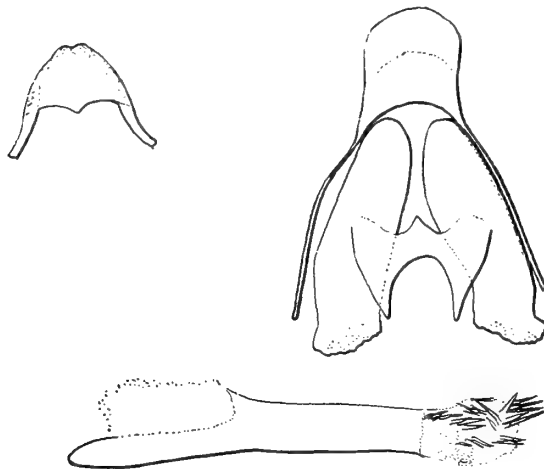


FIG. 67. *Aslauga lamborni* Bethune Baker, ♂ genitalia

LIST OF SPECIES OF *Aslauga*

- \**Aslauga aura* H. H. Druce, 1913.
- Aslauga bella* Bethune Baker, 1913.
- Aslauga bitjensis* Bethune Baker, 1924 : 211.
- \**Aslauga lamborni* Bethune Baker, 1913.
- Aslauga leonae* Aurivillius, see *vinga*.
- Aslauga marginalis* Kirby, see *vinga*.
- Aslauga marginata* (Plötz), see *vinga*.
- Aslauga modesta* Schultzze, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1192.
- \**Aslauga pandora* H. H. Druce, 1913.
- Aslauga purpurascens purpurascens* (Holland), 1890.
- Aslauga purpurascens marginaria* Talbot, 1937, *Trans. ent. Soc. Lond.* 86 : 61, fig.
- Aslauga purpurascens marshalli* Butler, 1898.
- Aslauga subfulvida* (Holland), see *vinga*.
- \**Aslauga vinga* (Hewitson), 1875.
- marginata* (Plötz), 1880 ; *marginalis* Kirby, 1890 ; *subfulvida* (Holland), 1890 (as *Epitola* sp.) ; *leonae* Aurivillius, 1920.

Genus **PARASLAUGA** Bethune Baker

*Paraslauga* Bethune Baker, 1924, *Trans. ent. Soc. Lond.* 1924 : 207. Type-species : *Aslauga kallimoides* Schultzze, by original designation.  
*Aslauga* Kirby (partim) ; Aurivillius, 1920 : 243.

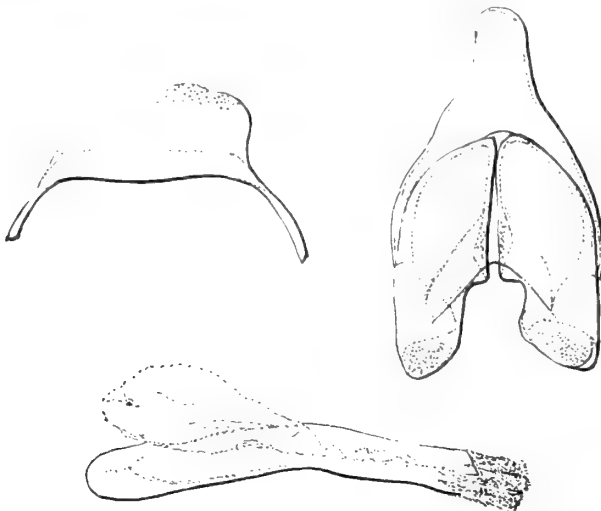


FIG. 68. *Paraslauga kallimoides* (Schultzze), ♂ genitalia.

*Eyes* smooth ; palpi slightly divergent, protruding beyond the frons, second segment clothed with adpressed scales, third segment fairly long ; antennae short and thick, segments hardly longer than broad, club cylindrical, poorly differentiated ; ♂ fore tarsi with five distinct segments densely clothed with short, very fine hair.

*Wing shape* peculiar ; fore wing slightly falcate, outer margin deeply excised between the apex and the end of vein 4, then strongly convex as far as the much rounded internal angle ; hind wing outer margin very convex between the apex and the end of vein 3, concave between veins 3 and 1b, and with a wide, spatulate tail at the end of vein 1b, inner margin concave between 1b and the end of 1a.

*Wing venation* (Text-fig. 253).

*Male genitalia* (Text-fig. 68). (I had at my disposal only one specimen, of which the abdomen had been dorsally mutilated by a parasite, hence I cannot accurately describe the uncus.) Uncus subrectangular with rounded angles (?) ; no subunci ; tegumen narrow ; vinculum prolonged to form a very large rounded saccus ; lower fulcrum attached to the middle of the valves, which are oblong with rounded apices ; penis elongate, subcylindrical, widely open on the dorsal surface of the internal portion, vesica armed with numerous cornuti, giving it a shagreened appearance ; distal edge of uncus and apices of valves pilose.

#### LIST OF SPECIES OF *Paraslauga*

*Paraslauga kallimoides* (Schultze), 1912.

*cephien* (H. H. Druce), 1913.

#### Genus *EULIPHYRA* Holland

*Euliphyra* Holland, 1890, *Psyche* 5 : 423 ; Aurivillius, 1898 : 285 ; 1920 : 343 ; Bethune Baker, 1924 : 203. Type-species : *Euliphyra mirifica* Holland, selected by Hemming, 1964, *Annot. Lep.* 1 : 132.

*Eyes* smooth ; palpi rather short, second segment of medium length, third segment much reduced ; antennae short, with a sharply differentiated cylindrical club ; ♂ fore tarsus with five distinct segments.

*Wing shape* peculiar ; outer margin of fore wing forming a well marked angle at the extremity of vein 4, deeply excised between veins 4 and 2 ; hind wing produced at its anal angle, forming a kind of obtuse tail at the extremity of vein 1b.

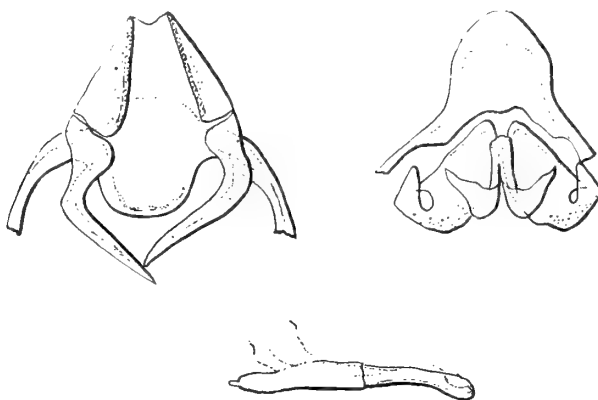


FIG. 69. *Euliphyra mirifica* Holland, ♂ genitalia.

*Wing venation* (Text-fig. 254). The figure given by Bethune Baker (1924 : 204) is not correct ; he shows 13 veins in the fore wing.

*Male genitalia* (Text-fig. 69). Uncus trapezoidal, the posterior edge notched, the two side edges folded back on the inner surface ; subunci long, robust, tapered at the apex and bent at an obtuse angle ; anterior edge of tegumen strongly convex, projecting towards tergite 8 ; vinculum rather wide, prolonged below to form a large rounded saccus ; inferior fultura composed of two lobes in the form of a crescent ; valves moderately large, oblong, the apex of the upper process bent back ; penis very small, elongate, subcylindrical with rounded apex ; sides of uncus and distal portions of the valves bearing a few hairs.

The genitalia of *E. leucyana* are of the same type as those of *E. mirifica*, except that the subunci are bent in an acute angle. In both these species the genitalia resemble somewhat those of *Liphyra brassolis* Westwood.

Of all Ethiopian genera, *Euliphyra* comes nearest to the Indo-Malayan *Liphyra*, not only in the structure of its male genitalia and the segmented fore tarsi of the male but also in the morphology and ethology of its early stages. The caterpillar of *E. mirifica* has been described by Lamborn (*Trans. ent. Soc. Lond.* 1913 : 450) and Eltringham (*Trans. ent. Soc. Lond.* 1913 : 509 and *ibid.* 1921 : 474). It is dorsally clothed in a tough carapace which protects it admirably from the attacks of ants (*Oecophylla smaragdina longinosa* Latreille), in the nest of which it lives. The conical head is borne on a sort of retractile neck. It does not seem to eat any vegetable food ; the ants feed it by regurgitation and get nothing in exchange. Pupation takes place practically inside the skin of the last larval instar, and this is another analogy with *Liphyra brassolis*, in which, however, the chrysalis is completely enclosed in the cast-off skin.

LIST OF SPECIES OF *Euliphyra*

- Euliphyra hewitsoni* Aurivillius, see *mirifica*.
- \**Euliphyra leucyana* (Hewitson), 1874. Fig. Hewitson, 1878.
- \**Euliphyra mirifica mirifica* Holland, 1890.  
*hewitsoni* Aurivillius, 1898.
- Euliphyra mirifica sjoestedti* Aurivillius, 1895.

Genus **EGUMBIA** Bethune Baker

*Egumbia* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) 14 : 135. Type-species : *Egumbia catori* Bethune Baker, 1924 = (*Epitola ernesti* Karsch, 1895) by original designation.  
*Euliphyrodes* Romieux, 1937, *Mitt. schweiz. ent. Ges.* 17 : 120.

Bethune Baker, owing to the segmentation of the fore tarsi, mistook the type specimen of *catori* for a female, whereas it is really a male as shown by the genitalia. Karsch had previously described *ernesti* (1895) from a true female.

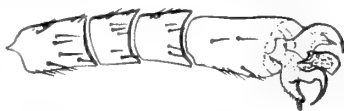


FIG. 70. *Egumbia ernesti* (Karsch) ♂, extremity of anterior tarsus.

*Head* small ; eyes smooth ; palpi protruding beyond the frons, slightly ascendant, second segment long, clothed below with white scales, third segment very short, blackish with a few white scales ; antennae short, scarcely half the length of the costa, with a poorly differentiated fusiform club ; thorax and abdomen robust, clothed below with white silky hair ; legs clothed with yellow scales, tibiae shorter than the femora ; ♂ fore tarsus (Text-fig. 70) five-segmented and bearing at the apex two strong claws.

*Wing venation* (Text-fig. 255).

*Male genitalia* (Text-fig. 71) : dorsum (i.e. uncus and tegumen) folded over like a hood, the posterior edge rounded, with a shallow median depression, and a median rounded bulge on the anterior edge ; no subcuni ; vinculum rather narrow, prolonged backwards to form a large rounded saccus ; lower fultra composed of two small lobes attached near the base of the valves, which are subtriangular with rounded apices ; penis long, strong, subcylindrical, with its apex obliquely truncate ; vesica bearing numerous small cornuti ; uncus and apices of valves bearing long, fine hairs.

The genitalia somewhat resemble those of *Aslauga vininga* Hewitson, in the reduced dorsal elements, the absence of subunci, the large rounded saccus and the robust penis. This similarity, like the segmented fore tarsi of the male, shows that the genus *Egumbia* belongs to the Liphyrinae and not, as Bethune Baker supposed, to the Epitolinae. Karsch did not place *ernesti* in *Epitola* without some reserve.

The holotype of *Epitola ernesti* Karsch is a female. In 1895 Karsch did not know the male, which was only described in 1904 by Suffert (*Dt. ent. Z. Iris* 17 : 52). The two sexes of this species are very dissimilar in appearance, the male being silvery blue, the female almost pure white. When Bethune Baker received two specimens from Egumbe, in Northern Nigeria, he believed them to be females, though in fact they were males, as I have been able to ascertain by dissecting one of them. As it did not occur to Bethune Baker that his specimens could be Karsch's *Epitola ernesti*, he described them as *catori* and erected for them the new genus *Egumbia* at the same time. There is no doubt whatever that *catori* is the male of Karsch's *ernesti*.

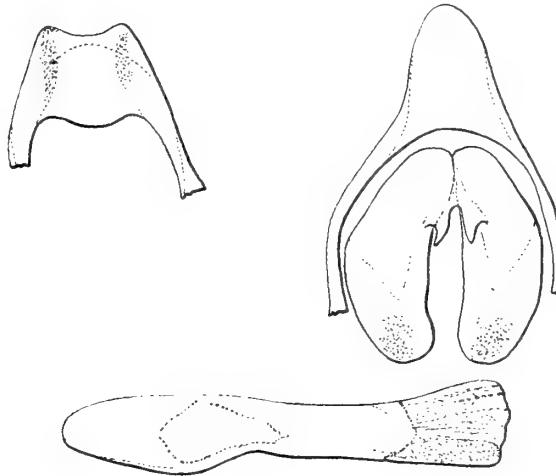


FIG. 71. *Egumbia ernesti* (Karsch), ♂ genitalia.



Unfortunately I have not been able to examine the type of *katangana* Romieux, type-species of the genus *Euliphyrodes* Romieux, but judging by the description and figures published by this author, it seems to be certain that *katangana* is also a male of *ernesti*.

The synonymy of the names is indicated in the list of species given below.

LIST OF SPECIES OF *Egumbia*

***Egumbia catori*** Bethune Baker, see *ernesti*.

***Egumbia ernesti*** (Karsch) (as *Epitola* sp.), 1895.

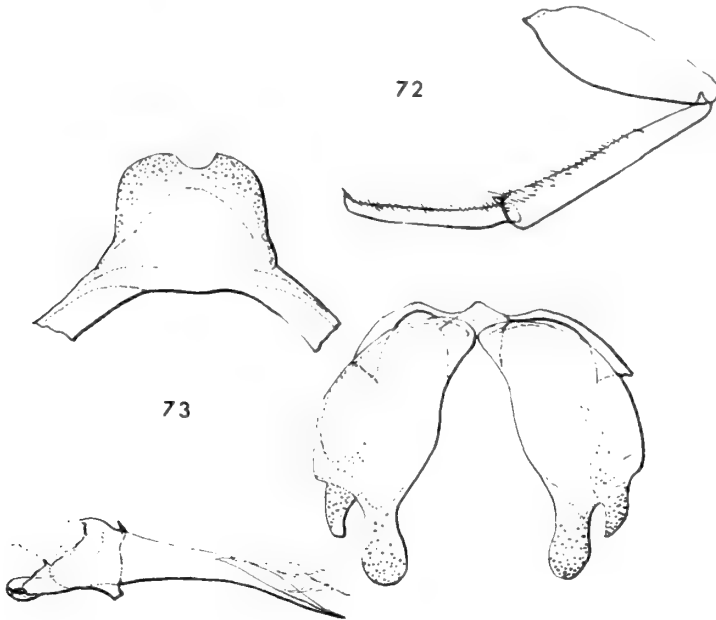
*catori* Bethune Baker, 1924; *katangana* (Romieux) (as *Euliphyrodes* sp.), 1937.

***Egumbia katangana*** (Romieux), see *ernesti*.

Genus **TERATONEURA** Dudgeon

*Teratoneura* Dudgeon, 1909, *Proc. ent. Soc. Lond.* : 50 ; Aurivillius, 1920 : 344 ; Bethune Baker, 1924 : 205. Type-species : *Teratoneura isabellae* Dudgeon, by monotypy.

Eyes smooth ; palpi with second segment laterally compressed, much enlarged, oval, third segment much reduced, short, conical ; antennae just under half the length of the costa, club poorly differentiated, expanding gradually, reddish brown with an orange apex ; ♂ fore leg (Text-fig. 72) with femur swollen, tibia long, tarsus unsegmented (in contradiction to Bethune Baker's description [1924 : 199]), clothed with scales, furnished below with two rows of short spines, and devoid of claws ; mid leg swollen, clothed with scales ; hind leg with flattened tibia and tarsus.



FIGS 72-73. *Teratoneura isabellae* ♂, 72, anterior leg ; 73, genitalia.

*Wing shape* peculiar ; in the ♂ the apex of the fore wing is almost rectangular, outer margin straight from the apex to the end of vein 4, concave between veins 4 and 2, inner angle much rounded ; in the ♀ the apex is rounded instead of angular ; in both sexes the hind wing is almost quadrangular with a very concave fore margin.

*Wing venation* (Text-fig. 256). Fore wing with veins 2 and 3 arising from the lower edge of the cell and strongly curved towards the inner margin. Hind wing : vein 8 is very long, runs parallel to the costa and arises from the upper edge of the cell, not from the base of the wing, as indicated in error by Bethune Baker (1924 : 205).

*Male genitalia* (Text-fig. 73). Uncus crescentic, with a shallow notch in the posterior edge ; no subunci ; tegumen subtriangular ; vinculum fairly wide ; a small lower fultura sheathing the base of the penis ; valves oblong, the two processes separated at the apex, the upper process with blunt apex, the lower lobed ; penis elongate, slightly curved, the external portion tapering uniformly to the obliquely cut apex ; uncus and apices of valves densely pilose.

The life-history of *T. isabellae* has been well described by Farquharson (see Eltringham, 1921, *Trans. ent. Soc. Lond.* **1921** : 342 and 476, pl. 12, figs 7 to 9, 14 and 15). I give below a brief résumé of the paper. The caterpillar has the appearance of that of a species of Lymantriidae ; all segments bear dorsal and lateral tubercles, and each tubercle is adorned with a tuft of long, fine, branched hairs ; on segments 5 to 8 there are urticating spicules. The chrysalis, in the thoracic and dorsal regions, is covered with " chitinanths ", which give it a mouldy appearance. The imago sucks up the secretion of certain *Coccidae*, after driving away the ants for which this secretion is the usual food.

The systematic position of *Teratoneura* is doubtful. Bethune Baker included it in the Liphyrinae, having erroneously endowed it with a segmented male fore tarsus, whereas, as I have said above, the male fore tarsus has the usual Lycaenid structure. The lymantriid aspect of the caterpillar and its mode of life indicate relationship with *Epitola*, *Hewitsonia*, etc.

#### LIST OF SPECIES OF *Teratoneura*

\**Teratoneura isabellae isabellae* Dudgeon, 1909.

\**Teratoneura isabellae congoensis* Stempffer, 1953, *Annls Mus. R. Congo belge* **46** : 16.

#### Genus *IRIDANA* Aurivillius

*Iridana* Aurivillius, 1920 : 345. Type-species : *Iris incredibilis* Staudinger, by monotypy.

*Iris* Staudinger, 1891, *Dt. ent. Z.* *Iris* **4** : 141 (invalid homonym).

*Iridopsis* Aurivillius, 1898 : 286 (invalid homonym).

*Eyes* large, naked ; palpi slightly turned upwards, protruding far beyond the frons, second segment long, thick, clothed below with short hairs, third segment one-third to one-quarter the length of the second, smooth, acuminate ; antennae slender, two-thirds the length of the costa, club short ; thorax long, very pilose ; fore leg slender, smooth, tibia slightly longer than the femur, ♂ tarsus unsegmented, about two-thirds the length of the tibia.

*Wing venation* (Text-fig. 257). Fore wing, vein 2 strongly recurved towards the inner margin ; vein 3 also recurved but not so strongly ; vein 7 is doubly curved and ends at the apex ; vein 9 missing.

*Male genitalia* (Text-fig. 74). Tegumen subtriangular excised caudad ; uncus represented by two lateral strips folded inwards ; no subunci ; vinculum fairly wide, prolonged into a long slender saccus ; lower fultura pedunculate, sheathing the base of the penis ; valves sub-oval, the two processes separate at the apex, the lower process notably longer than the upper ; penis long, slightly curved, ending in a slender point, widely open on its upper surface ; uncus and apices of valves pilose.

The male genitalia of all the known species of *Iridana* are so similar that they do not provide useful specific characters.

The larvae of *I. incredibilis* and *I. marina* have been observed by Farquharson (1921, *Trans. ent. Soc. Lond.* 1921 : 357) and T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* 86 : 208). The latter suggests that they feed on lichens among ants, though in captivity they were reared in the absence of ants. They are nocturnal, living and pupating in silken shelter tents in crevices on the bark of trees. They live in the neighbourhood of the nests of ants of the genus *Crematogaster* which ignore them, yet assure them of a kind of passive protection. They have no dorsal glands. The chrysalis of *I. incredibilis* has been described and figured by Eltringham (1921, *Trans. ent. Soc. Lond.* 1921 : 477), that of *marina* by Jackson (*l.c.* : 209).

LIST OF SPECIES OF *Iridana*

- Iridana ansorgei* (Smith), see *incredibilis*.
- \**Iridana bwamba* Stempffer, 1964 : 1258, fig.
- Iridana euprepes* (H. H. Druce), 1905.
- \**Iridana exquisita* (Smith), 1898. Fig. Smith & Kirby, 1901.
- \**Iridana gabunica* Stempffer, 1964 : 1246, fig.
- \**Iridana ghanana* Stempffer, 1964 : 1249, fig.
- \**Iridana hypocala* Eltringham, 1929, *Trans. ent. Soc. Lond.* 1929 : 494 (fig. ♀).  
Fig. Stempffer, 1964 : 1243.
- magnifica* Hawker Smith, 1933.



FIG. 74. *Iridana incredibilis* (Staudinger), ♂ genitalia.

- \**Iridana incredibilis* (Staudinger), 1891.  
*ansorgei* (Smith), 1898.
- \**Iridana jacksoni* Stempffer, 1964 : 1252, fig.
- \**Iridana katera* Stempffer, 1964 : 1255, fig.  
*Iridana magnifica* Hawker Smith, see *hypocala*.
- \**Iridana marina* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 74 (♀) ; Stempffer, 1964 : 1241 (♂), fig.
- \**Iridana nigeriana* Stempffer, 1964 : 1247, fig.
- \**Iridana obscura* Stempffer, 1964 : 1259, fig.
- \**Iridana perdita* (Kirby), 1890. Fig. Smith & Kirby, 1891 (♀) ; Stempffer, 1964 : 1239 (♂), fig.
- \**Iridana rougeoti* Stempffer, 1964 : 1244, fig.
- \**Iridana tororo* Stempffer, 1964 : 1253, fig.
- \**Iridana unyoro* Stempffer, 1964 : 1262, fig.

### Genus *DELONEURA* Trimen

*Deloneura* Trimen, 1868, *Trans. ent. Soc. Lond.* **1868** : 81 ; Aurivillius, 1898 : 287 ; 1920 : 346 ; Murray, 1935 : 58 ; Swanepoel, 1953 : 189. Type-species : *Deloneura immaculata* Trimen, by monotypy.

Of the type-species there are only three known specimens, all females, captured by J. H. Bowker on the Bashee River, Kaffraria and preserved in the S. African Museum, Cape Town. I have been unable to examine them and must be content to reproduce Trimen's very full description.

*Head* wide, flattened anteriorly, clothed with scales above ; eyes prominent, smooth ; palpi naked, ascending, widely divergent, second segment much swollen, third segment rather short, slender, pointed ; antennae of moderate length, robust, gradually becoming incrassate, the apex slightly curved outwards ; thorax short, robust, smooth, sparsely clothed anteriorly with scales and posteriorly with fine hairs ; legs very robust, smooth, hairless, femur and tibia in all about the same length.

Trimen considered that among his three specimens there were two males and one female, but in fact all three specimens are females. In consequence he wrongly concluded that the fore tarsus is segmented in both sexes, an error repeated by Bethune Baker (1924 : 202). In 1906 Trimen, when describing *D. millari*, recognized that the segments of the male fore tarsi in *Deloneura* were fused together, short, and clothed below with fine spines. I have been able to verify this in *D. millari dondoensis* and *D. millari sheppardi*.

*Wing venation.* Text-fig. 258 is of *D. immaculata*, after Aurivillius (1898 : 287) ; Text-fig. 259 is of *D. millari*.

The shape of the wings and their venation in the species of *Deloneura* have sometimes been drawn inaccurately ; in Aurivillius' drawings of *D. immaculata* the inner margin of the fore wing is shown as straight, whereas Trimen says it is convex basally. Murray (1935 : 58) repeats Trimen's description, but his fig. 6 of *D. millari* shows only eleven veins on the fore wing, vein 9 having been omitted.

Bethune Baker (1924 : 202) also says " there are but eleven veins on the fore wing ". My personal observation of *D. millari* agrees completely with the characters given by Trimen in his description of the genus, viz. : fore wing with twelve veins and inner margin basally convex.

Male genitalia of *D. millari* (Text-fig. 75). Uncus composed of two subtriangular, apically rounded lobes, separated by a deep depression of the posterior margin and united to the tegumen by a translucent zone ; subunci long, strong, curved, tapering evenly to the apex ; tegumen triangular ; vinculum fairly wide ; lower fultura consisting of a simple fold of the lower edge of the valves which are oblong with rounded apices ; penis elongate, curved, with a slender base, the upper surface bearing at the beginning of the external portion two rounded expansions separated by a longitudinal groove, the apical portion slender and widely open to allow the passage of the vesica ; uncus bearing long, fine hairs ; valves almost bare except the upper process near its apex.

The male genitalia of *D. millari* are closely allied to those of *Epitola posthumus* Fabricius. In spite of big differences in venation and external appearance, it seems to me that the genus *Deloneura* should be included in the Epitolinae.

LIST OF SPECIES OF *Deloneura*

*Deloneura barca* (Smith), 1901.

*Deloneura immaculata* Trimen, 1868.

*Deloneura innesi* van Son, 1949, *Occ. Pap. natn. Mus. Sth. Rhod.* **2** (15) : 259.

*Deloneura millari millari* Trimen, 1906.

\**Deloneura millari dondoensis* Pennington, 1953, *Jl ent. Soc. sth. Afr.* **16** : 102, fig.

\**Deloneura millari sheppardi* Stevenson, 1934, *Occ. Pap. natn. Mus. Sth. Rhod.* **3** : 15, fig.

*Deloneura subfusca* Hawker Smith, 1933, *Stylops* **2** : 10.

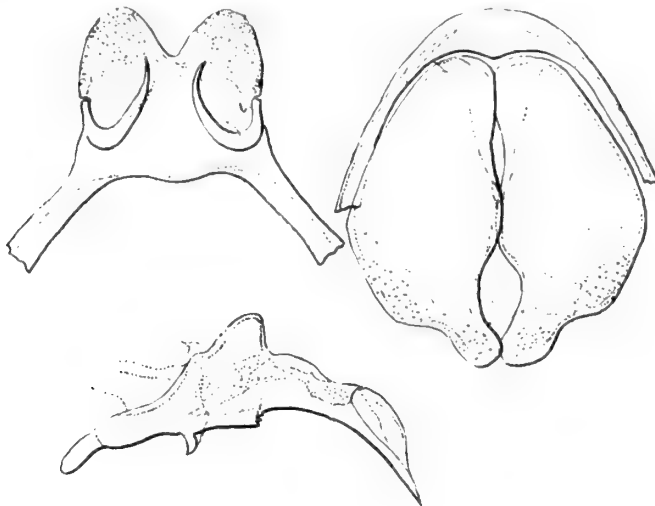


FIG. 75. *Deloneura millari* Trimen, ♂ genitalia.

Genus **EBEPIUS** Hemming

*Ebepius* Hemming, 1964, *Annot. Lep.* (4) : 141. Type-species : *Poultonia ochrascens* Neave, by monotypy.

*Poultonia* Neave, 1904, *Novit. zool.* **11** : 336 (invalid homonym).

*Deloneura* Trimen (partim) ; Aurivillius, 1920 : 347.

*Head* short and wide ; eyes smooth ; palpi not short as stated by Neave in his description, but protruding considerably beyond the frons, second segment much swollen, third segment frail, acuminate ; antennae half as long as the costa, gradually becoming thicker from the base to the poorly differentiated club ; thorax robust ; ♂ fore tarsus unsegmented, bearing below a double row of short spines.

*Wing venation* (Text-fig. 260). There are several inaccuracies in the figure given by Neave (l.c. : 336) ; on the fore wing vein 3 arises before, and not from the lower angle of the cell, and vein 9 which branches out of 7, is omitted. On the fore wing in the ♂ a secondary sexual character is present in the form of an ochreous line below and alongside the swelling in vein 1.

*Male genitalia* (Text-fig. 76). Uncus bilobed, the lobes subtriangular with rounded apices and separated by a median depression ; subunci slender, curved ; tegumen subtriangular, connected to the uncus by a very slightly chitinized zone ; vinculum narrow, prolonged to form a short saccus ; the small lower fulcrum secures the penis to the base of the valves ; valves oblong with rounded apices ; the penis resembles that of some species of *Epitola* (e.g. *posthumus*), narrow at the base with, on its dorsal surface, rounded expansions separated by a deep longitudinal groove, thence gradually tapering to a pointed apex ; lobes of uncus and apices of valves pilose.

I do not see in the wing venation or in the genital armature any important character permitting the separation of *Ebepius* from *Deloneura*. This was also the opinion of Aurivillius (1920 : 346).

The egg, caterpillar and chrysalis of *P. ochrascens* have been described by T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 209). The caterpillar is black, clothed with long, black hair, and resembles the caterpillar of certain Lymantriidae. It lives among ants of the genus *Crematogaster*, which seem to avoid it. It probably feeds on bark or on micro-fungi.

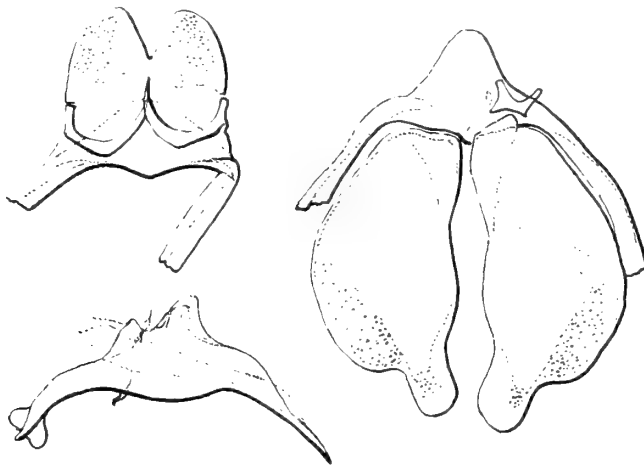


FIG. 76. *Ebepius ochrascens* (Neave), ♂ genitalia.

LIST OF SPECIES OF *Ebepius*

\**Ebepius ochrascens ochrascens* (Neave), 1904.

\**Ebepius ochrascens littoralis* (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 74.

Genus **BATELUSIA** H. H. Druce

*Batelusia* H. H. Druce, 1910, *Proc. zool. Soc. Lond.* **1910** : 367 ; Aurivillius 1920 : 347. Type-species : *Batelusia zebra* H. H. Druce, by original designation.

*Eyes* large and naked ; palpi ascending, distinctly protruding beyond the frons, second segment long, clothed below with adpressed scales, third segment short, slender, acuminate ; antennae slender, white annulated ; thorax slender ; legs clothed with scales, ♂ fore tarsus very short, unsegmented, hind tibia swollen.

*Wing shape* : short and broad, fore wing with costa and outer margin strongly convex ; hind wing oval with blunt anal angle.

*Wing venation* (Text-fig. 261). Fore wing with only 11 veins, vein 9 being absent.

Druce in his original description compared the genus *Batelusia* with *Powellana* ; he noted that in the fore wing veins 10 and 11 are free and do not have a common stem, but he did not mention the absence of vein 9, which however is missing in the specimens that I have examined.

*Male genitalia* (Text-fig. 77). Uncus crescentic with a rounded distal edge ; subunci long, strongly curved, swollen in the middle and then tapering to a sharp pointed apex ; tegumen triangular, somewhat heavily sclerotized ; vinculum rather narrow, prolonged to form a tapering saccus ; lower fultura fused to the base of the valves, closely sheathing the internal portion of the penis ; valves oblong, ending in a small rounded process ; penis robust, external portion ending in an obliquely cut apex ; on the dorsal surface of the external portion there are two large, rounded expansions, analogous to those found in *Epitola posthumus* but much larger ; uncus densely pilose, but valves bare except for the upper edge and the distal process.

The genitalia of *zebra* show close relationship to those of species of *Epitola*, *Phytala*, etc.

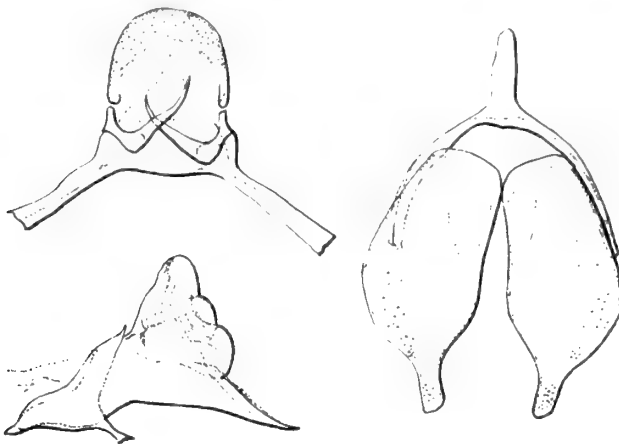


FIG. 77. *Batelusia zebra* Druce, ♂ genitalia.

LIST OF SPECIES OF *Batelusia*

\**Batelusia zebra* H. H. Druce, 1910.

Genus *TUMEREPEDES* Bethune Baker

*Tumerepedes* Bethune Baker, 1913, *Ann. Mag. nat. Hist.* (8) **11** : 564. Type-species : *Tumerepedes flava* Bethune Baker, by original designation.

*Tumerepes* Aurivillius, 1920 : 564 (unjustified emendation).

Eyes smooth ; palpi fairly short and yet protruding beyond the frons, third segment almost as long as the first two together, smooth, cylindrical and ending in a point ; antennae short, two-fifths the length of the costa, thickening gradually up to the poorly differentiated club, segments of antenna distinct, scarcely longer than broad ; legs with femora and tibiae swollen and equal in length, mid femora not so swollen as fore and hind femora.

As the unique holotype is the only known specimen, and a ♀, I have been unable to examine the fore tarsus and genitalia of a ♂.

*Wing-venation* (Text-fig. 262).

LIST OF SPECIES OF *Tumerepedes*

*Tumerepedes flava* Bethune Baker, 1913.

Genus *NEAVEIA* H. H. Druce

*Neaveia* H. H. Druce, 1910, *Proc. zool. Soc. Lond.* **1910** : 364 ; Aurivillius 1920 : 348. Type-species : *Neaveia lamborni* H. H. Druce, by original designation.

Head wide ; eyes prominent, naked ; palpi shining black, fairly long, turned upwards, slightly divergent, second segment long, swollen, clothed below with scales and bearing on the inner surface pale brown hairs, third segment short, slender, acuminate ; antennae slender with ovoid club ; thorax rather robust ; legs : tibia shorter than femur, ♂ fore tarsus unsegmented, spinose below, hind tibia slightly swollen.

*Wing venation* (Text-fig. 263).

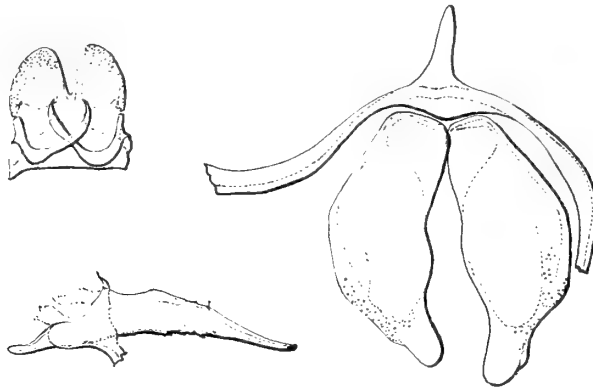


FIG. 78. *Neaveia lamborni* Druce, ♂ genitalia.



*Male genitalia* (Text-fig. 78). Uncus composed of two subtriangular lobes with rounded lateral margins separated by a deep median depression ; subunci long, curved, dilated in the middle ; tegumen subtriangular ; vinculum rather narrow, prolonged to form a slender saccus ; lower fultura sheathing the base of the penis and fused to a fold of the base of the valves ; valves oblong with rounded apices, shaped as in *Epitola* ; penis elongate, with a slender obliquely truncate apex, the lower surface of the external portion bearing a few fine spines ; uncus densely pilose, only a few hairs on the upper edge of the distal portion of the valves.

LIST OF SPECIES OF *Neaveia*

\**Neaveia lamborni lamborni* H. H. Druce, 1910.

*Neaveia lamborni orientalis* Jackson, 1962, *Bull. Br. Mus. nat. Hist. (Ent.)* **12** : 158, figs.

Genus **PSEUDONEAVEIA** Stempffer

*Pseudoneaveia* Stempffer, 1964 : 1265. Type-species : *Pseudoneaveia jacksoni* Stempffer, by original designation.

*Eyes* naked ; second segment of palpi swollen, brown-scaled ; third segment acuminate blackish, brown-tipped ; stem of antennae weakly white-ringed, club weak, blackish ; tarsus of ♂ fore leg unsegmented, spinose beneath.

*Wing venation* (Text-fig. 264).

*Male genitalia* (Text-fig. 79, in profile). Uncus composed of two subtriangular lobes, rounded apically folded back and fused at right angles to the tegumen ; subunci absent ; vinculum narrow, prolonged to form a short saccus ; lower fultura ensheathing the base of the penis ; valves subrectangular with a slightly recurved finger-like apex ; penis elongate, the distal portion gently curved, the sharp-pointed apex dorsally widely open ; uncus densely hairy, the upper margin of the valves also hairy, but less densely, towards the apex.

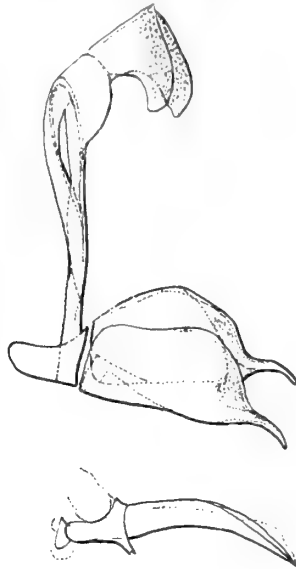


FIG. 79. *Pseudoneaveia jacksoni* Stempffer, ♂ genitalia.

The dorsal (tergal) part of the genitalia in *P. jacksoni* is profoundly different from that of other Epitolinae. In these the uncus in general crescentic, more or less excised caudad, bounding an oval-shaped tegumen and, besides, provided with well-developed subunci. It is because of this very special condition that I have been led to erect the genus *Pseudoneaveia*.

LIST OF SPECIES OF *Pseudoneaveia*

\**Pseudoneaveia jacksoni* Stempffer, 1964 : 1265.

Genus **EPITOLINA** Aurivillius

*Epitolina* Aurivillius, 1895, *Ent. Tidsk.* **16** : 205 ; 1898 : 287 ; 1920 : 348. Type-species : *Teriomima dispar* Kirby, by monotypy.

*Eyes* naked ; palpi long, protruding far beyond the frons, second segment slightly swollen, clothed below with adpressed scales, third segment long, slender, acuminate ; segments of antennae long and thin, club ovoid, well differentiated ; thorax clothed ventrally with long, silky brown hairs ; legs black and white annulated ; ♂ fore tarsus unsegmented, hind tarsi swollen.

*Wing venation* (Text-fig. 265). Vein 9 very long and branching from 7 near its base.

*Male genitalia* (Text-fig. 80). Uncus shaped like a segment of a circle, the apex forming a rounded weakly obtuse angle ; subunci long, curved, the median portion swollen and with its lower edge forming an acute angle, tapering at the apex ; tegumen fairly large ; vinculum rather narrow, with a much reduced saccus ; valves oblong, widened at the base, the lower process ending in a blunt point ; penis elongate, gently curving, the apex obliquely cut to a sharp point ; uncus and upper process of valves densely and finely pilose.

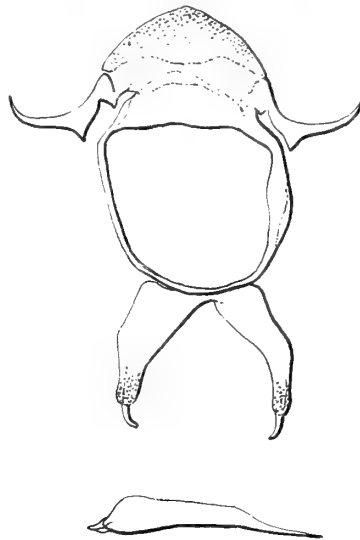


FIG. 80. *Epitolina dispar* (Kirby), ♂ genitalia.

The genitalia of *E. catori* are of the same type as those of *E. dispar*, but the posterior margin of the uncus forms an acute angle apically, the subunci are less swollen medially, and the valves are shorter and wider.

*Epitolina* is scarcely distinguishable from *Epitola* unless by its feeble stature and the longer vein 9 of the fore wings.

LIST OF SPECIES OF *Epitolina*

- \**Epitolina catori catori* Bethune Baker, 1904.
- \**Epitolina catori ugandae* Jackson, 1962 : 159, figs.
- \**Epitolina dispar* (Kirby), 1887, fig. Smith & Kirby, 1888.  
*mnestra* (Möschler), 1888.
- Epitolina dispar* f. *dubia* (Kirby), 1890.
- \**Epitolina dispar* f. *cordelia* (Kirby), 1890.
- \**Epitolina dispar* f. *melissa* (H. H. Druce), 1888.
- Epitolina mnestra* (Möschler), see *dispar*.

Genus *STEMPFFERIA* Jackson

*Stempfferia* Jackson, 1962 : 157. Type-species : *Stempfferia carcassoni* Jackson, 1962, by original designation.

Eyes faintly pubescent ; palpi protruding beyond the frons, black, the second segment laterally compressed, third segment cylindrical, acuminate ; antennae half as long as fore wing costa, black above, ringed with white below, club slightly swollen ; legs not swollen, fore tarsi of the ♂ unsegmented, pilose beneath.

Sexual dimorphism is considerable : on the upperside the ♂ is clear blue, the ♀ slightly yellowish white.

*Wing venation* (Text-fig. 266). In the ♂ fore wing vein 10 is weakly stalked on vein 7, and vein 11 arises from the same point as vein 7 ; in the ♀ veins 10 and 7 are also connate, and vein 11 arises very shortly before them.

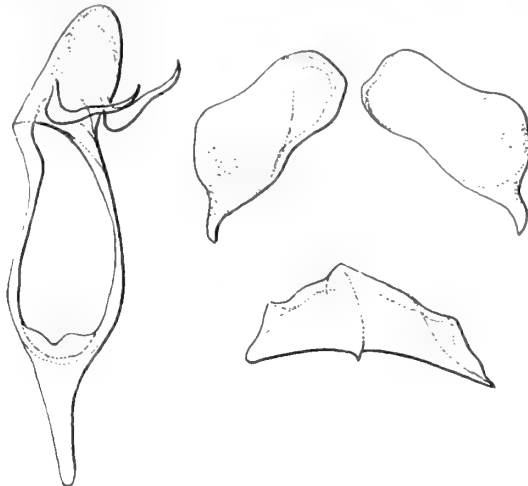


FIG. 81. *Stempfferia carcassoni* Jackson, ♂ genitalia of type.

*Male genitalia* (Text-fig. 81). Uncus in the form of a crescent, the distal margin not excised ; subunci long, curved, swollen at the bend, ending in a sharp point ; tegumen subtriangular ; vinculum rather narrow, prolonged to form a long triangular saccus which bears long coremata apically. Lower fultura very reduced ; valves subquadrangular, the upper process ending in a gently curved point. Penis short, very robust, the apex obliquely truncate and widely open dorsally. Uncus and distal part of the upper process of the valves covered with long fine hair.

#### LIST OF SPECIES OF *Stempfferia*

\**Stempfferia carcassoni* Jackson, 1962 : 157, figs.

#### Genus *PHYTALA* Westwood

*Phytala* Westwood 1851, *Gen. Diurn. Lep.* plate 77 ; Aurivillius, 1898 : 288 ; 1920 : 348.

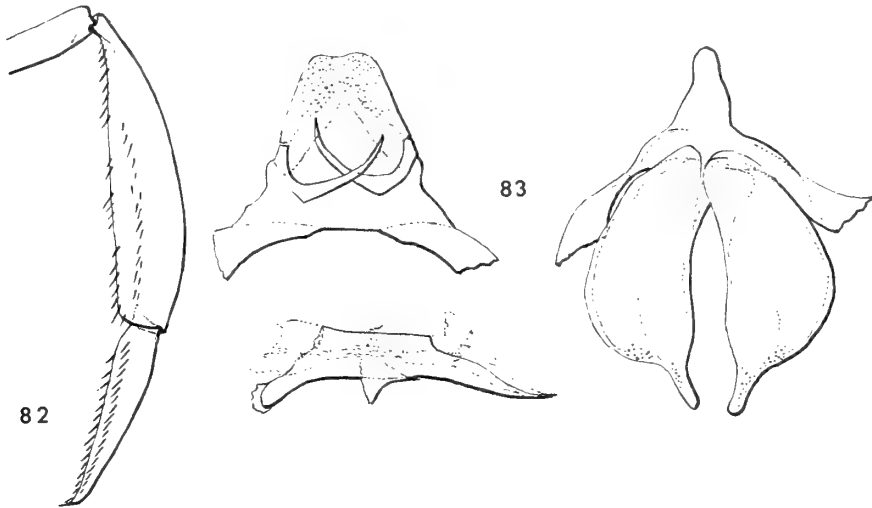
Type-species : *Phytala elais* Westwood (l.c.), by monotypy.

*Eyes* naked ; palpi scarcely projecting beyond the frons, second segment long, swollen, clothed with adpressed scales, third segment very short, ovoid ; antennae a little over half the length of the costa, club very gradual, poorly differentiated, fusiform ; ♂ fore leg (fig. 82) with tibia swollen slightly longer than the femur, tarsus unsegmented, tapering evenly, tibia and tarsus bearing below two rows of spines ; mid and hind legs with similarly swollen tibiae, longer than the femora and bearing two rows of spines.

Secondary sexual character in the ♂ a patch of blackish brown hair-scales at the base of the inner margin of the fore wing.

*Wing venation* (Text-fig. 267). Fore wing with vein 11 short and uniting with 12 (this is not an entirely constant character ; in a specimen of *P. elais catori* which I examined, veins 11 and 12 run close together but remain separate right to the costa).

*Male genitalia* (Text-fig. 83). Uncus crescentic, the posterior edge with a shallow notch ; subunci long, curved, slightly dilated in the middle and from there gradually tapering to the apex ; tegumen triangular ; vinculum fairly broad, prolonged to form a stout saccus ; the small lower fultura fused to a fold of the base of the valves and closely sheathing the base of the



FIGS 82-83. *Phytala elais catori* Bethune Baker ♂, 82, fore leg ; 83, genitalia.

penis ; valves oblong, ending in a slightly recurved process with rounded apex ; penis elongate, subcylindrical, slightly curved, the apex obliquely truncate and widely open ; uncus and median and distal parts of the valves all very pilose.

I have examined the genitalia of eight other species besides *P. elais*, namely *P. vansomereni*, *P. hyettoides*, *P. intermixta*, *P. henleyi*, *P. schultzei*, *P. reducta*, *P. benitensis* and *P. rezia*.

The genitalia of all these species are all much alike and of a type common to most of the Epitolinae, but the dorsal surface of the penis bears rounded expansions which are not present in *P. elais*. This last species is rather isolated in the genus *Phytala* both in its larger size and in the shape of its hind wings, in which the margin is slightly angled.

LIST OF SPECIES OF *Phytala*

- Phytala aequatorialis* Jackson, 1964 : 62, figs.
- \**Phytala benitensis* (Holland), 1890. Fig. Jackson, 1964.
- Phytala elaidina* Strand, see *elais catori*.
- \**Phytala elais elais* Westwood, 1851.
- Phytala elais catori* Bethune Baker, 1903.  
*elais* f. *elaidina* Strand, 1920.
- \**Phytala elais ugandae* Jackson, 1964 : 60, figs.
- \**Phytala henleyi* (Kirby), 1890. Fig. Smith & Kirby, 1892.
- Phytala hyetta* (Hewitson), 1873. Fig. Hewitson, 1878.
- Phytala hyettina* Aurivillius, 1897. Fig. Aurivillius, 1898.
- \**Phytala hyettoides* (Aurivillius), 1895. Fig. Aurivillius, 1920.
- \**Phytala intermixta* Aurivillius, 1897. Fig. Aurivillius, 1898.
- Phytala nigrescens* Jackson, 1964 : 67, figs.
- Phytala obscura* Schultze, 1915, *Arch. Naturgesch.* **81**, A, 12 : 142.
- \**Phytala reducta* Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1197. Fig. Jackson, 1964.
- \**Phytala rezia* (Smith & Kirby), 1893.
- \**Phytala schultzei* Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1196, fig.
- \**Phytala vansomereni* Jackson, 1964 : 60, figs.

Genus *EPITOLA* Westwood

*Epitola* Westwood, 1851, *Gen. Diurn. Lep.* pl. 68, fig. 5 ; Aurivillius, 1898 : 289 ; 1920 : 349.  
Type-species : *Epitola elion* Westwood, 1851, l.c., by monotypy (*Papilio posthumus* Fabricius, 1793).

*Eyes* large, smooth ; palpi ascending, protruding well beyond the frons, clothed with adpressed scales, second segment robust, much swollen, third segment short, slender, acuminate ; antennae long and fine with a gradually swollen ovoid club ; ♂ fore leg with femur somewhat swollen, tibia long and slender, tarsus short, unsegmented, finely spinose below.

*Wing venation* (Text-fig. 268). Fore wing with 11 and 12 not confluent, 10 and 11 arising free from anterior border of cell ; hind wing cell produced at its lower angle, the lower discocellular being very oblique.

The venation is not entirely constant in all the species of *Epitola*. In *carcina*, *leonina* and *zelza* vein 10 arises as a branch of 7 not far from its origin ; in other species vein 11 and 12 are sometimes in contact.

*Male genitalia* (Text-fig. 84, A, B). Uncus subtriangular, with rounded apex, joined to the tegumen by a semimembranous piece which is translucent under the microscope ; subunci long, gently curved, swollen in the middle, tapering towards the apex ; tegumen large ; vinculum rather large and prolonged to form a long saccus, which is directed towards the genital orifice and bears at the apex a tuft of long black scales ; lower fultura fused to the base of the valves and sheathing the base of the penis ; valves oblong with widely rounded apices. Uncus clothed with an abundance of long, fine hairs, upper process of valves pilose in its distal third.

The penis is variable. I have dissected the genitalia of six specimens of "*posthumus*", all externally very similar. In four specimens (Text-fig. 84, B) the structure agrees with the figures given by Talbot (1921, *Bull. Hill Mus. Witley* 1 : 1, pl. 8, fig. 7) that is to say that on the middle of the dorsal surface there are two rounded expansions separated by a deep longitudinal groove and the ventral surface bears only a few very fine spines ; and the distal part tapers regularly and is widely open dorsally. In the other two specimens the general shape of the penis is the same (Text-fig. 84A), and bears the same dorsal expansions but on the ventral surface there is moreover in the middle a small protuberance which bears irregular teeth followed by fine spines. I do not know whether we are here dealing with individual variations or a pair of sibling species, but the second hypothesis seems to be the more probable.

The genus *Epitola* is numerous in species. I have studied the genitalia of only a limited number of them, since they rarely furnish specific characters. The dorsal elements and the valves are very much alike in all those I have examined. I have only found appreciable differences in the form of the penis. The dorsal expansion of the penis in *posthumus* recurs, strongly developed, in *urania* (c.f. Talbot l.c. fig.

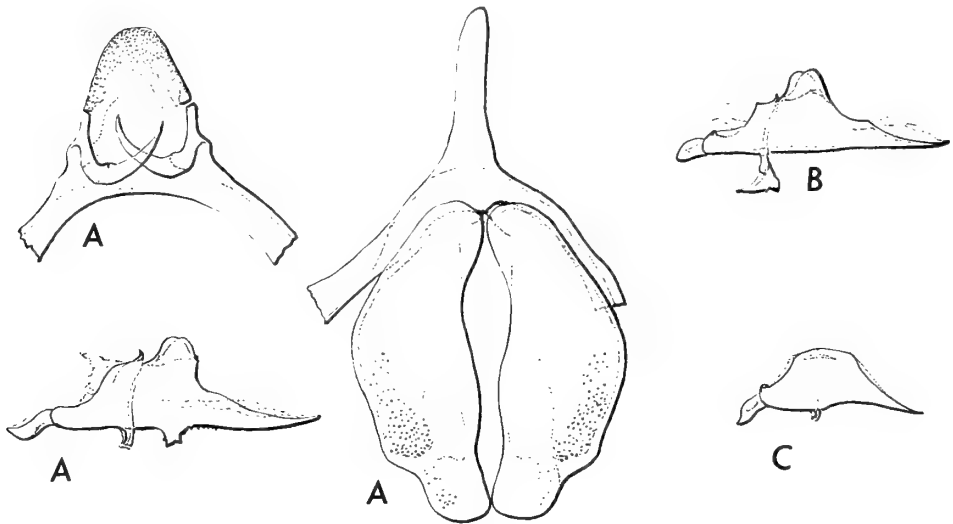


FIG. 84. *Epitola* spp., ♂ genitalia, (A, B) *E. posthumus* (Fabricius), (C) *E. cercene* Hewitson.

10), less so in *decellei* and *ceraunia*. It does not occur in the following species :—*hewitsoni* (Text-fig. 85), *stempfferi*, *crowleyi*, *conjuncta*, *carcina*, *marginata*, *cercene*, *moyambina*, *cercenoides*, *iturina*, *staudingeri* and *leonina*.

The pupae of *E. hewitsoni*, *E. miranda*, *E. conception*, *E. carcina* and *E. ceraunia* have been described and figured by Eltringham (1922, *Trans. ent. Soc. Lond.* 1921: 473-5, pl. 12, figs 1, 3, 13, 18). The chrysalis of *E. hewitsoni* is quite remarkable, as it bears tubercles armed with strong, curved spines.

LIST OF SPECIES OF *Epitola*

- Epitola adolphifrederici* Schultze, 1911. Fig. Seitz, 1920.  
*Epitola alba* Jackson, 1962 : 155, figs.  
*Epitola albomaculata* Bethune Baker, 1903 (♂) ; 1904 (♀). Fig. Seitz.  
*Epitola ammon* Joicey & Talbot, see *semibrunnea*.  
*Epitola azurea* Jackson, 1962 : 148, figs.  
*Epitola badia* Kirby, see *zelza*.  
*Epitola badura* Kirby, 1890. Fig. Smith & Kirby, 1891.  
*Epitola batesi* H. H. Druce, see *cercenoides*.  
*Epitola bella* Aurivillius, see *iturina*.  
*Epitola belli* Hewitson, see *posthumus*.  
*Epitola bwamba* Jackson, 1964 : 73, figs.  
 \**Epitola carcina* Hewitson, 1873. Fig. Hewitson, 1878.  
     *kholifa* Bethune Baker, 1904.  
*Epitola carilla* Roche, 1954 : 495, figs.  
*Epitola catuna* Kirby, 1890. Fig. Smith & Kirby, 1892.  
     *mus* Suffert, 1904.  
*Epitola catuna carpenteri* Bethune Baker, 1921, *Trans. ent. Soc. Lond.* 1921 : 462 (♂) ; Jackson, 1962 : 144, fig. (♀).



FIG. 85. *Epitola hewitsoni* Mabille, ♂ genitalia.

- Epitola cephena cephena*** Hewitson, 1873. Fig. Hewitson, 1878 (♀).  
*doleta* Kirby, 1890 (♂) ; *leonina* Bethune Baker, 1903 ; *leonensis* Bethune Baker, 1904.
- Epitola cephena entebbeana*** Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 392 (♂) ; Jackson, 1962 : 146, fig. (♀).
- \* ***Epitola ceraunia*** Hewitson, 1873. Fig. Hewitson, 1878 (♂).  
*dewitzi* Kirby, 1887 (♀).
- \* ***Epitola cercene*** Hewitson, 1873. Fig. Hewitson, 1878 (♂).  
*versicolor* Kirby, 1887 (♀).
- \* ***Epitola cercenoides*** Holland, 1890.  
*batesi* H. H. Druce, 1910.
- Epitola ciconia*** Kirby, see *leonina* Staudinger.
- Epitola coerulea*** Jackson, 1962 : 140, figs.
- Epitola conception*** Suffert, 1904. Fig. Aurivillius in Seitz, 1920.
- Epitola congoana*** Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1202.
- \* ***Epitola conjuncta conjuncta*** Smith & Kirby, 1893.  
***Epitola conjuncta budduana*** Talbot, 1937, *Trans. ent. Soc. Lond.* 86 : 62, fig.  
***Epitola convexa*** ♂ Roche, 1954, l.c. : 496, figs. (♂) ; Jackson, 1962 : 131, figs. (♀).
- \* ***Epitola crowleyi*** E. M. Sharpe, 1890.  
*hewitsoni* Staudinger, 1889 (invalid homonym).
- Epitola cyanea*** Jackson, 1964 : 71, figs.
- Epitola daveyi*** Roche, 1954 : 499, figs.
- \* ***Epitola decellei*** Stempffer, 1956 : 30, figs.
- Epitola dewitzi*** Kirby, see *ceraunia*.
- Epitola doleta*** Kirby, see *cephena*.
- Epitola dolorosa*** Roche, 1954 : 498, figs.
- Epitola dorothea*** Bethune Baker, 1904. Fig. Jackson, 1962.
- Epitola dubia*** Jackson, 1964 : 70, figs.
- Epitola dunia*** Kirby, 1887. Fig. Smith & Kirby, 1889 (♂) ; Jackson, 1962 : 141, figs. (♀).
- Epitola elion*** Westwood, see *posthumus*.
- Epitola elissa*** Grose Smith, 1898. Fig. Smith & Kirby, 1902 (♂) ; Jackson, 1962 : 139, (♀), figs.  
*oniensis* Bethune Baker, 1913.
- Epitola falkensteini*** Dewitz, see *hewitsoni*.
- Epitola flavoantennata*** Roche, 1954 : 495, figs.
- Epitola gerina*** Hewitson, 1878 (♂) ; Jackson, 1964 : 68, figs. (♀).
- Epitola ghesquierei*** Roche, 1954 : 498, figs. (♂) ; Jackson, 1962 : 145, figs. (♀).  
*nigeriae* Jackson, 1962.
- Epitola goodi*** Holland, 1890. Fig. Smith & Kirby, 1892 (♀) ; Jackson, 1964 : 69, figs. (♂ & ♀).
- \* ***Epitola hewitsoni*** Mabille, 1877. Fig. Aurivillius in Seitz, 1920.  
*falkensteini* Dewitz, 1879.



- Epitola hewitsoni* Staudinger, see *crowleyi*.
- Epitola hewitsonioides* Hawker Smith, 1933, *Stylops* 2 : 11. Fig. Jackson, 1964.
- Epitola ikoya* Roche, 1954 : 497, figs.
- Epitola insulana* Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exped.* 1910-11, 1 : 1203, fig. (♂) ; Jackson, 1962 : 133, fig. (♀).
- Epitola intermedia* Roche, 1954 : 497, fig. (♂) ; Jackson, 1964 : 74, fig. (♀).
- \**Epitola iturina* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* 1 : 85, fig. *bella* Aurivillius, 1923.
- Epitola jacksoni* Roche, see *mara*.
- Epitola kamengensis* Jackson, 1962 : 150, fig.
- Epitola katerae* Jackson, 1962 : 149, fig.
- Epitola katharinae* Poulton, 1929, *Trans. ent. Soc. Lond.* 77 : 494, fig.
- Epitola kholifa* Bethune Baker, see *carcina*.
- Epitola lamborni* Bethune Baker, 1921, *Trans. ent. Soc. Lond.* 1921 : 461.
- Epitola leonensis* Bethune Baker, see *cephena*.
- Epitola leonina* Bethune Baker, see *cephena*.
- \**Epitola leonina* Staudinger, 1888 ; Jackson, 1962 : 136, fig. (♀). *ciconia* Kirby, 1892.
- Epitola liana* Roche, 1954 : 500, fig. (♂) ; Jackson, 1962 : 138, fig. (♀).
- Epitola maculata* Hawker Smith, 1926, *Revue zool. afr.* 14 : 240. *pulchra* Jackson, 1964.
- \**Epitola magnifica* Jackson, 1964, *Ann. Mag. nat. Hist.* (13) 7 : 699, fig.
- Epitola mara* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 75 (♂) ; Jackson, 1962 : 135, fig. (♀). *jacksoni* Roche, 1954.
- Epitola marginata marginata* Kirby, 1887. Fig. Smith & Kirby, 1889 ; Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* 1 : 85, fig. (♀).
- Epitola marginata umbratilis* Holland, 1980.
- Epitola mengoensis* Bethune Baker, 1906 (♂). Fig. Aurivillius in Seitz, 1920 ; Jackson, 1962 : 153, fig. (♀).
- Epitola mercedes* Suffert, 1904. Fig. Jackson, 1962.
- Epitola miranda miranda* Staudinger, 1889. Fig. Smith & Kirby, 1893 (♂) ; Jackson, 1962 : 126, fig. (♀).
- Epitola miranda vidua* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 75 (♂) ; Jackson, 1962 : 127, fig. (♀).
- Epitola mirifica* Jackson, 1964, : 72, fig.
- \**Epitola moyambina* Bethune Baker, 1903, (♂) ; Jackson, 1962 : 130, fig. (♀).
- Epitola mpangensis* Jackson, 1962 : 149, figs.
- Epitola mus* Suffert, see *catuna*.
- Epitola nigeriae* Jackson, 1962, see *ghesquierei*.
- Epitola nigra* Bethune Baker, 1903.
- Epitola nigrovenata* Jackson, 1962 : 136, figs.
- Epitola nitide* H. H. Druce, 1910.
- Epitola obscura* Hawker Smith, 1933, *Stylops* 2 : 11.

- Epitola oniensis* Bethune Baker, see *elissa*.  
*Epitola orientalis* Roche, 1954 : 499, fig.  
*Epitola ouesso* Jackson, 1962 : 147, fig.  
*Epitola pinodes* H. H. Druce, 1890. Fig. Smith & Kirby, 1891.  
*Epitola pinoides* Smith & Kirby, 1893.  
\**Epitola posthumus* (Fabricius), 1793. Fig. Hewitson, 1878.  
*elion* Westwood, 1851 (♂) ; *belli* Hewitson, 1874 (♀).  
*Epitola pseudoconjuncta* Jackson, 1962 : 153, figs.  
*Epitola pulchra* Jackson, 1964, see *maculata*.  
*Epitola pulverulenta* Dufrane, 1953, *Bull. Anns Soc. R. ent. Belg.* **89** : 51.  
*Epitola rileyi* Audeoud, 1936, *Bull. Soc. lépidopt. Genève* **7**, 5 : 186, fig.  
*Epitola semibrunnea* Bethune Baker, 1916, *Ann. Mag. nat. Hist.* (8) **17** : 378.  
*ammon* Joicey & Talbot, 1921.  
\**Epitola staudingeri staudingeri* Kirby, 1890. Fig. Aurivillius in Seitz, 1920  
(♂) ; Jackson, 1962 : 134, fig. (♀).  
*Epitola staudingeri aequatorialis* Jackson, 1962 : 135, figs.  
*Epitola staudingeri gordonii* H. H. Druce, 1903.  
\**Epitola stempfferi* Jackson, 1962 : 127, fig.  
*Epitola subalba* Bethune Baker, see *zelica*.  
*Epitola subargentea* Jackson, 1964, *Ann. Mag. nat. Hist.* (13) **7** : 698, fig.  
*Epitola subcoerulea* Roche, 1954 : 498, figs.  
*Epitola subgriseata* Jackson, 1964 : 72, figs.  
*Epitola sublustris* Bethune Baker, 1904.  
*Epitola tumentia* H. H. Druce, 1910 (♂) ; Jackson, 1962 : 137, fig. (♀).  
*Epitola uniformis* Kirby, 1887 (♂). Fig. Smith & Kirby, 1889 ; Jackson, 1962 :  
133, figs. (♀).  
*versicolor* (♂) Kirby, 1887.  
\**Epitola urania urania* Kirby, 1887 (♂). Fig. Smith & Kirby, 1889 ; Jackson,  
1962 : 128, figs. (♀).  
*Epitola urania tanganikensis* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley*  
**1** : 86, fig. (♂) ; Jackson, 1962 : 129, fig. (♀).  
*Epitola versicolor* Kirby, ♂ see *uniformis*, ♀ see *cercene*.  
*Epitola vinalli* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 75 (♂) ; Jackson,  
1962 : 154, figs. (♀).  
*Epitola virginea* Bethune Baker, 1904 (♀) ; Roche, 1954 : 501, fig. (♂).  
*Epitola viridana viridana* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 84,  
figs. (♂). Fig. ♀ (as *orientalis* ♀) Jackson, 1962 : 143.  
*Epitola viridana radiata* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 393.  
*Epitola zelica* Kirby, 1890 (♂). Fig. Smith & Kirby, 1892 ; Jackson, 1964 : 69,  
fig. (♀).  
*subalba* Bethune Baker, 1915.  
*Epitola zelza* Hewitson, 1873. Fig. Hewitson, 1878.  
*badia* Kirby, 1887.

Genus *NEOEPITOLA* Jackson

*Neopitola* Jackson, 1964, *Bull. Br. Mus. nat. Hist. (Ent.)* **15** : 78. Type-species : *Epitola barombiensis* Kirby, 1890, by original designation.

*Epitola* Westwood (partim) : Aurivillius, 1898 : 293 ; 1920 : 358.

*Eyes* smooth ; palpi reaching beyond the frons, the second segment broad, laterally compressed, third segment short, slender, acuminate ; antennae less than half the length of costa, annulated black and white, club distinct and flattened ; legs black with a few white scales, fore tarsi of ♂ unsegmented, tibiae of hind legs swollen.

*Wing venation* (Text-fig. 269). On the fore wing vein 11 arises from 10 and is very close to, but not touching, vein 12.

*Male genitalia* (Text-fig. 86). Uncus crescentic, its posterior margin slightly depressed dorsally ; subunci rather stout, curved near the base ; tegumen suboval ; vinculum rather broad, prolonged as a long triangular saccus ; lower fultura attached to a fold of the base of the valves, tightly enclosing the base of the penis ; valves oblong, obliquely truncate at the apex, and with the upper process bearing a kind of subtriangular harpe clothed in small short spines ; penis elongate, the dorsal and ventral margins of the external part deeply excised, the whole resembling a shallow sickle complete with handle and curved blade ; uncus densely pubescent, the distal fourth of valves slightly hairy.

LIST OF SPECIES OF *Neopitola*

*Neopitola barombiensis* (Kirby), 1890. Fig. Smith & Kirby, 1892.

Genus *AETHIOPANA* Bethune Baker

*Aethiopana* Bethune Baker, 1915, *Ann. Mag. nat. Hist. (8)* **16** : 191. Type-species : *Papilio honorius* Fabricius, by original designation.

*Epitola* Westwood (partim) ; Aurivillius, 1898 : 291 ; 1920 : 351.

*Eyes* large, smooth ; palpi ascending, protruding far beyond the frons, clothed with adpressed scales, second segment robust, much swollen, third segment short, slender, acuminate ; antennae

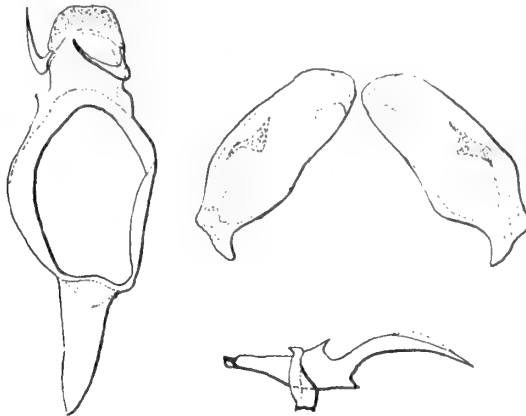


FIG. 86. *Neopitola barombiensis* (Kirby), ♂ genitalia.

long, slender, with a swollen club ; ♂ fore leg with tibia long, thin, tarsus short, unsegmented.

Secondary sexual characters. On the fore wing in the ♂ there is a large androconial dull blackish brown patch situated between the upper edge of the cell, vein 5 and the costa, and vein 1 is swollen and underlined by long brown hairs.

*Wing venation* (Text-fig. 270). Fore wing 8, 9, and 10 are stalked on 7 which arises from the upper margin of the cell well before its upper angle, 11 free ; hind wing cell drawn out at the lower angle.

*Male genitalia* (Text-fig. 87) : uncus subtriangular, united to the tegumen by a slightly sclerotized translucent area ; subunci long, curved, tapering towards the apex ; tegumen trapezoidal ; vinculum broad and prolonged to form a long saccus ; lower fultura tightly sheathing the base of the penis ; valves oblong and with rounded apices as in *Epitola* ; penis long, slightly curved, tapering gradually to its apex, and devoid of the dorsal expansions of *Phytala* and some species of *Epitola* ; uncus densely clothed with many long, fine hairs ; a few short hairs on the distal portion of the valves.

The caterpillar and chrysalis of *A. honorius* have been described and figured by Eltringham (1922, *Trans. ent. Soc. Lond.* 1921 : 474, pl. 12, figs 16 and 17). The caterpillar bears on each segment four tubercles adorned with tufts of fine spines and long, delicate, branched hairs. The chrysalis bears dorsal and lateral tubercles furnished with recurved spines and chitinanth on its abdominal segments.

#### LIST OF SPECIES OF *Aethiopana*

\**Aethiopana honorius honorius* (Fabricius), 1793.

*teresa* (Hewitson), 1869.

*Aethiopana honorius* ab. ♂ *coarctata* Hulstaert, 1924, *Revue zool. afr.* 12 : 118.

*Aethiopana honorius divisa* (Butler), 1901.

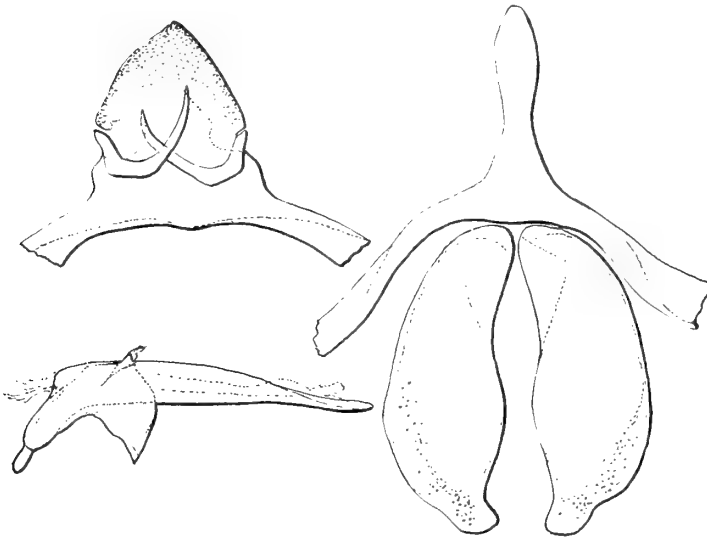


FIG. 87. *Aethiopana honorius honorius* (Fabricius), ♂ genitalia.

Genus **HEWITSONIA** Kirby

*Hewitsonia* Kirby, 1871, *Cat. Diurn. Lep.* : 426, nom. nov. pro *Corydon* Hewitson, 1869 (*Ill. Diurn. Lep. Suppl.* : 1), praeocc. ; Aurivillius, 1898 : 294 ; 1920 : 359. Type-species : *Corydon boisduwali* Hewitson, 1869, by monotypy.

*Eyes* large, glabrous ; palpi long, ascending, distinctly protruding beyond the frons, second segment robust, clothed below with adpressed scales, third segment slender, acuminate ; antennae long, slender, with a poorly differentiated, gradually swollen club ; ♂ fore tibia long, its unsegmented tarsus finely spinose below.

*Wing venation* (Text-fig. 271). On the hind wing the lower discocellular is straight, not concave as in *Epitola* so that the cell is not drawn out at its lower angle.

*Male genitalia* (Text-fig. 88) : uncus crescentic, its posterior margin very slightly excised, joined to the tegumen by a lightly sclerotized zone, which appears translucent under the microscope ; subunci long, fairly robust, curved, tapering gradually to the apex ; tegumen subtriangular ; vinculum moderately broad and prolonged to form a long saccus bearing at its tip a tuft of long black scales ; valves oblong with rounded apices as in *Epitola* ; penis robust, gently curved, ending in a sharp point, widely open dorsally ; uncus densely clothed with long, fine hair, apex of the valves bearing short hairs.

I have examined the male genitalia of *Hewitsonia similis*, *H. kirbyi* and *H. magdalenae*. Those of *H. bitjeana* have been figured by Joicey and Talbot (1921, *Bull. Hill Mus. Willey* 1, pl. 8, fig. 3). These four species are all very similar to *boisduwalii*. In a recent work Jackson (1964: 3) has figured the genitalia of *H. mittoni*. In this the dorsal structures and the valves are clearly of the *Hewitsonia* type, but the penis shows the rounded dorsal expansions which are present in *Phytala* and certain species of *Epitola*.

The caterpillar and chrysalis of *H. intermedia* have been described by T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* 86 : 209). The caterpillar feeds on lichens. It resembles that of some species of Lymantriidae ; fore part of body wider than hind part, dorsum smooth, sides and extremity fringed with long, fine hairs, and on each segment some shorter, thicker light brown silky hairs.

The chrysalis of *H. similis* has been described and figured by Eltringham (1922, *Trans. ent. Soc. Lond.* 1921 : 478, pl. 12, fig. 2).



FIG. 88. *Hewitsonia boisduwali boisduwali* Hewitson, ♂ genitalia.

LIST OF SPECIES OF *Hewitsonia*

- Hewitsonia beryllina* Schultze, see *bitjeana*.  
*Hewitsonia bitjeana* Bethune Baker, 1915, *Ann. Mag. nat. Hist.* (8) **16** : 190.  
*beryllina* Schultze 1916.  
 \**Hewitsonia boisduvali boisduvali* (Hewitson, 1869).  
*Hewitsonia boisduvali* ab. *virilis* Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exp.*  
 1910-11, **1** : 1209.  
*Hewitsonia boisduvali* ab. ♀ *albifascia* Hulstaert, 1924, *Revue zool. afr.* **12** : 118.  
*Hewitsonia boisduvali borealis* Schultze, 1916, *Arch. Naturgesch.* **81**, A, 11 : 111.  
*Hewitsonia boisduvali congoensis* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley*  
**1** : 87, fig.  
*Hewitsonia boisduvali nigeriensis* Jackson, 1962 : 160, figs.  
*Hewitsonia crippsi* (Stoneham), 1933, *Bull. Stoneham Mus.* **17** : 1.  
*Hewitsonia intermedia intermedia* Joicey & Talbot, 1921, *Bull. Hill Mus.*  
*Witley* **1** : 86, fig.  
*Hewitsonia intermedia gomensis* Dufrane, 1953, *Bull. Annl. Soc. R. ent. Belg.*  
**89** : 52.  
 \**Hewitsonia kirbyi* Dewitz, 1879.  
*preussi* Staudinger, 1890.  
 \**Hewitsonia magdalenae* Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 67, fig.  
*Hewitsonia mittoni* Jackson, 1964 : 77, figs.  
*Hewitsonia preussi* Staudinger, see *kirbyi*.  
 \**Hewitsonia similis similis* Aurivillius, 1891.  
*Hewitsoni similis ugandae* Jackson, 1962 : 160, figs.

Genus **POWELLANA** Bethune Baker

*Powellana* Bethune Baker, 1908, *Proc. zool. Soc. Lond.* **1908** : 114 ; Aurivillius, 1920 : 360.  
 Type-species : *Powellana cottoni* Bethune Baker, by original designation.

*Eyes* naked ; palpi protruding far beyond the frons, second segment slightly swollen, clothed with adpressed scales, third segment fairly long, acuminate ; antennae slender, with a poorly differentiated, gradually swollen, fusiform club ; ♂ fore leg with long slender tibia, short unsegmented tarsus, bearing fine spines below.

*Wing venation* (Text-fig. 272). Vein 11 branches from 10 near its base, a rare condition which occurs also in *Neoeplitola*.

*Male genitalia* (Text-fig. 89). Uncus crescentic, the hind edge evenly rounded ; subunci long, slender, curving, swollen in the distal half, then tapering ; tegumen triangular ; vinculum narrow, prolonged to form a long saccus ; lower fultura fused to a fold of the base of the valves, closely sheathing the base of the penis ; valves oblong, ending in a small rounded process ; penis robust, elongate, slightly curved, the apex obliquely cut and widely open ; uncus and distal edge of valves densely pilose.

The genitalia of *P. cottoni* closely resemble those of most of the species of *Eplitola*.

LIST OF SPECIES OF *Powellana*

- \**Powellana cottoni* Bethune Baker, 1908.  
*weberi* (Holland), 1913 ; *virginia* Birket Smith, 1960.  
*Powellana virginia* Birket Smith, see *cottoni*.  
*Powellana weberi* (Holland), see *cottoni*.

Genus **MEGALOPALPUS** Röber

*Megalopalpus* Röber, 1886, *Dt. ent. Z. Iris* **1** : 51 ; Aurivillius, 1898 : 300 ; 1923 : 361. Type-species : *Megalopalpus simplex* Röber, by original designation.

*M. simplex* was described as coming from Borneo, very probably the result of an error in labelling, for, as far as I know, it has never been found again in the Oriental Region, whilst it is common in Africa from the Gold Coast, Liberia, Nigeria, Cameroon, Gaboon and Congo to Uganda.

*Head* small ; eyes smooth ; palpi very long, even longer than in the Indo-Malayan genera *Miletus* and *Allotinus*, ascending, laterally compressed, clothed with short, adpressed hairs, third segment slightly longer than the second ; antennae slender, less than half as long as the costa, club fusiform, very slightly swollen ; thorax slender ; abdomen long, protruding far beyond the anal angle ; ♂ fore leg with tibia slightly shorter than the femur, tarsus very long, unsegmented, pubescent and with a single claw ; mid and hind legs with tibiae slightly shorter than femora, first tarsal segment very long ; no terminal claws.

In the shape of the hind wings the sexes show a marked difference. The outer margin in the ♂ has a slight angle at the end of vein 5, which in the ♀ is much more prominent.

*Wing venation* (Text-fig. 273) : fore wing with 11 veins, vein 9 being absent ; hind wing with a short precostal vein which arises from vein 8 near its base.

*Male genitalia* (Text-fig. 90) : uncus composed of two enormous triangular lobes with sharp pointed apices, fused at their base to the tegumen and separated by a very deep groove ; subunci fairly robust, regularly curved and tapering to the apex ; tegumen well developed with the

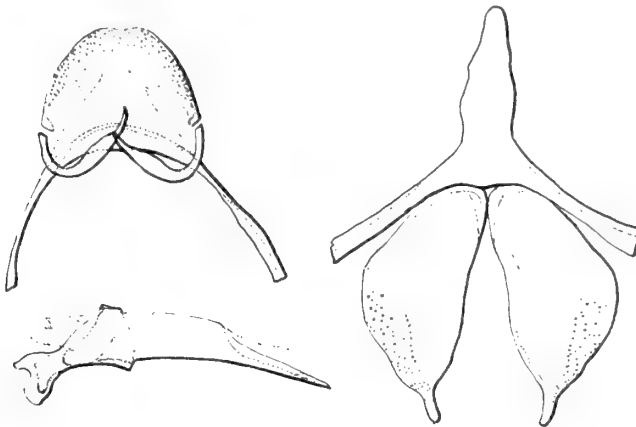


FIG. 89. *Powellana cottoni* Bethune Baker, ♂ genitalia.

posterior edge divided to form two hooks ; in the normal position the tegumen is folded over and the two lobes of the uncus face one another, the straight edges of the groove being dorsal ; vinculum wide dorsally, narrow below ; no lower fultura ; valves much reduced compared with the dorsal structures, finger-shaped with a small, sharp tooth on the inferior edge near the apex ; penis subcylindrical, elongate, very slender ; uncus with a felt-like covering of fine hairs, distal portion of the valves pilose.

The male genitalia of *M. zymna* and *M. metaleucus* are very similar to those of *simplex*.

Bethune Baker (1914, *Trans. ent. Soc. Lond.* **1914** : 317, pl. 58, figs 9 and 9a) figured the genitalia of "*Megalopalpus gigas*", the name occurring only in the explanation of the plate. The genitalia figured correspond exactly with those of *M. simplex*.

The early stages of *M. zymna* have been described by W. A. Lamborn (1914, *Trans. ent. Soc. Lond.* **1913** : 458). The caterpillar is protected from attack by ants by a coriaceous skin bearing tubercles tipped with coarse hairs ; it is carnivorous and feeds on Jassidae and Membracidae (Hemiptera). Its mode of life is the same as that of the caterpillar of *Gerydus chinensis* Felder and demonstrates the close relationship of *Megalopalpus* to the Indo-Malayan genera *Gerydus*, *Allotinus* etc.

The shape of the palpi, the venation and the genitalia indicate that *Megalopalpus* should be included in the sub-family Miletinae (= Gerydinae), as Aurivillius and Bethune Baker have already pointed out.



FIG. 90. *Megalopalpus simplex* Röber, ♂ genitalia.



LIST OF SPECIES OF *Megalopalpus*

*Megalopalpus angulosus* Grünberg, 1910.

*Megalopalpus bicoloria* (Capronnier), see *simplex*.

*Megalopalpus gigas* Bethune Baker, 1914, *Trans. ent. Soc. Lond.* 1914, explanation of pl. 58, see *simplex*.

\**Megalopalpus metaleucus* Karsch, 1893. Fig. Aurivillius in Seitz, 1923.

*Megalopalpus similis* (Kirby), see *simplex*.

\**Megalopalpus simplex* Röber, 1886.

*bicoloria* (Capronnier), 1889; *similis* Kirby, 1890; *gigas* Bethune Baker, 1914.

\**Megalopalpus zymna* (Westwood), 1851.

*Megalopalpus zymna* f. *pallida* Aurivillius, 1923.

Genus *LACHNOCNEMA* Trimen

*Lachnocnema* Trimen, 1887, *S. African Butterflies* 2 : 233; Aurivillius, 1898 : 301; 1923 : 362; Murray, 1935 : 55; Pinhey, 1949 : 97; Swanepoel, 1953 : 191. Type-species: *Papilio bibulus* Fabricius, 1793, selected by Hemming, 1960, *Annot. Lep.* 1 : 11.

*Head* small, pilose; eyes densely hairy; palpi long, ascending, first and second segments clothed below with stiff hair, third segment long, acuminate; antennae short, thick, with a poorly differentiated, cylindrical, blunt-tipped club; thorax short, very hairy; legs short, robust, femora and tibiae clothed with scales and dense long, woolly hair which conceals the basal portion of the tarsi; tarsi short, robust, scaly, with a few short bristles, spinose below; ♂ fore tarsus segmented like the other tarsi, but rather smaller and very hairy.

*Wing venation* (Text-fig. 274).

*Male genitalia* (Text-fig. 91): uncus subrectangular, the lateral angles rounded, and slightly folded back; subunci very long, bent at right-angles at one-third of their length, tapering gradually to an apex which bears a distinct hook; tegumen reduced to a narrow band; vinculum rather narrow, prolonged to form a spatulate saccus; inferior fultura well developed, like a furca, arising from the base of the valves; valves elongate with broadly rounded apices; to the upper process is articulated distally a long, finger-like process bent in the shape of an open V; the lower margin of the valves bears, about midway, a broad triangular expansion with rounded apex, and, midway beyond this a weak blunt tooth; penis elongate, fairly robust, slightly curved, tapering gradually to an obtuse apex; vesica bears fine cornuti which give it a shagreened appearance; uncus almost bare, distal portion of valves densely and finely pilose.

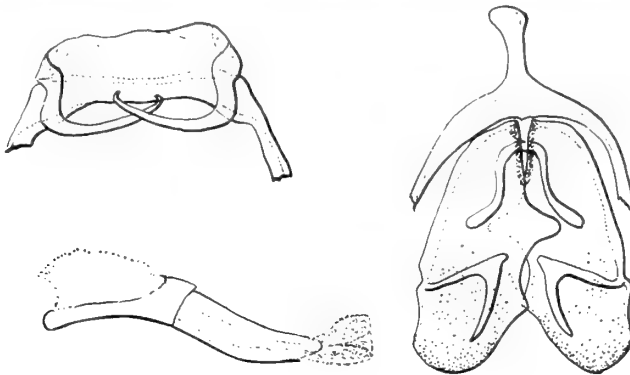


FIG. 91. *Lachnocnema bibulus* (Fabricius), ♂ genitalia.

The genitalia of *L. durbani* Trimen and *L. magna* Aurivillius closely resemble those of *L. bibulus*.

The caterpillar of *L. bibulus* has been frequently described :— Lamborn (1914, *Trans. ent. Soc. Lond.* **1913** : 470) ; Farquharson (*ibid.*, 1921 : 388) ; Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 210) ; Cripps and Jackson (*ibid.*, 1940, **89** : 449–453), and Pinhey (1949 : 97.)

The caterpillar lives and pupates in ants' nests, to which it has been carried by the ants. It feeds partly on the frass of Jassidae and Membracidae (Hemiptera), partly on plant sap and partly on food regurgitated by the ants. Lamborn (1913) noted that in captivity the caterpillar devoured numerous Jassidae.

#### LIST OF SPECIES OF *Lachnocnema*

- \**Lachnocnema bibulus* (Fabricius), 1793. Fig. Staudinger, 1887.  
*delegorguei* (Boisduval), 1847 ; *emperamus* (Snellen), 1872.  
*Lachnocnema brimo* Karsch, 1893. Fig. Aurivillius in Seitz, 1923.  
*sudanica* Aurivillius, 1905 ; *obliquisigna* Hulstaert, 1924 ; *rectifascia* Hulstaert, 1924.  
*Lachnocnema busoga* Bethune Baker, 1906.  
*Lachnocnema delegorguei* (Boisduval), see *bibulus*.  
*Lachnocnema disrupta* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 76, figs.  
*Lachnocnema divergens* Gaede, 1915. Fig. Aurivillius in Seitz, 1923.  
\**Lachnocnema durbani* Trimen, 1887. Fig. Aurivillius in Seitz, 1923.  
*Lachnocnema emperamus* (Snellen), see *bibulus*.  
*Lachnocnema exiguus* Holland, 1890. Fig. Aurivillius in Seitz, 1923.  
*Lachnocnema luna* H. H. Druce, see *reutlingeri*.  
\**Lachnocnema magna* Aurivillius, 1895. Fig. Aurivillius in Seitz, 1923.  
*umbra* (Smith), 1901 ; *niveus* H. H. Druce, 1910.  
*Lachnocnema niveus* H. H. Druce, see *magna*.  
*Lachnocnema obliquisigna* Hulstaert, see *brimo*.  
*Lachnocnema rectifascia* Hulstaert, see *brimo*.  
*Lachnocnema reutlingeri* Holland, 1892. Fig. Aurivillius in Seitz, 1923.  
*luna* H. H. Druce, 1910.  
*Lachnocnema sudanica* Aurivillius, see *brimo*.  
*Lachnocnema umbra* (Smith) see *magna*.

#### Genus *DEUDORIX* Hewitson

*Deudorix* Hewitson, 1863, *Ill. Diurn. Lep.*, Lycaenidae **1** : 16. Type-species : *Dipsas epijarbas* Moore (an Indian species), by original designation.

Eyes shortly and densely pilose ; palpi scarcely protruding beyond the frons, second segment long, laterally compressed, clothed with adpressed scales, third segment short, slender, acuminate ; antennae two-thirds the length of the costa, club elongate, fusiform ; thorax very

robust, especially in the ♂, clothed below with long white hair ; ♂ fore leg, femur clothed with long white hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape* : hind wing oval, apex rounded, outer margin showing a slight salient at the end of vein 3, vein 2 prolonged to form a short filiform tail, a small rounded lobe between the end of vein 1b and the anal angle, abdominal margin slightly excised between the lobe and the end of vein 1a. The presence of this lobe renders easy the recognition of the species of *Deudorix*.

*Wing venation* (Text-fig. 275). The venation in the figure given by Murray (1935 : 60) is incorrect ; the filiform tail is shown at the end of vein 1b when in fact it is at the end of vein 2.

*Male genitalia* (Text-fig. 92) : uncus composed of two lateral lobes separated by the rounded depression of the hind edge of the tegumen ; subunci long, strong, bent in an acute angle, suddenly narrowed a little before the apex, and with a small apophysis on the lower side at the level of the bend ; tegumen very large, hood-shaped ; vinculum narrow with a small round saccus ; no lower fultura ; valves small compared with the other structures, broadly fused together in their lower oval halves, distally consisting of a slightly recurved process which has an obliquely truncated apex, about midway the upper edges are folded inwards and connected to each other by a membrane ; penis elongate, subcylindrical, widely open dorsally and proximally, widening apically ; vesica with a group of cornuti ending in a single more robust apical spine ; uncus and middle part of valves pilose.

The description given above is based on the type-species alone, *Deudorix epijarbas*. Aurivillius included in the genus *Deudorix* all the Ethiopian Lycaenidae whose hind wings have the shape of those of *D. epijarbas* (i.e. with a lobe near the anal angle and a filiform tail at the end of vein 2) and whose venation agrees, at least on the whole, with that of *D. epijarbas*. But among these species there are some that differ from the type-species of *Deudorix*, either by the more rounded shape of the fore wings or by some venational detail, or by the presence in the male of conspicuous secondary sexual characters. Taking into account these differences, Karsch and H. H. Druce have erected the following genera for African species of *Deudorix* (*sensu* Aurivillius), *Hypomyrina* Druce, *Actis* Karsch, *Kopelates* Druce, *Hypokopelates* Druce, *Pilo-deudorix* Druce, and *Diopetes* Karsch. Most modern authors make use of these genera and they also assign to the Indo-Malayan genus *Virachola* Moore certain species included in *Deudorix* by Aurivillius. To test the validity of the above-mentioned genera I have examined their type-species and give the results under the appropriate genera (See also p. 108).

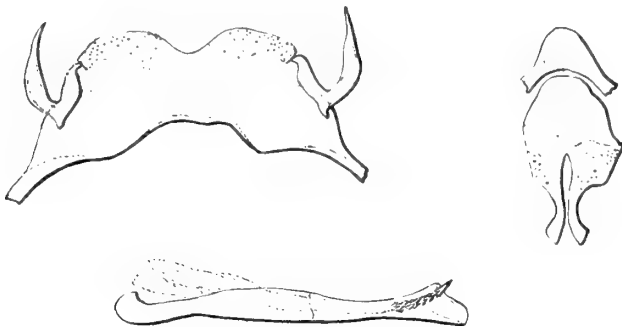


FIG. 92. *Deudorix epijarbus* (Moore), ♂ genitalia.

LIST OF SPECIES OF *Deudorix*

There is no African species that agrees precisely in all morphological characters with *Deudorix epijarbas*, and so would fall into typical *Deudorix*.

Genus **HYPOMYRINA** H. H. Druce

*Hypomyrina* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) **7** : 364. Type-species : *Myrina nomenia* Hewitson, by original designation.

*Deudorix* Hewitson (partim) ; Aurivillius, 1898 : 306 ; 1923 : 365.

*Eyes* shortly and densely pilose ; *palpi* moderately long, clothed with adpressed scales, third segment slender, acuminate, two-thirds the length of the second segment ; *antennae* long, slender, white annulated, club fusiform ; *legs* black and white annulated, ♂ fore leg with tibia shorter than the femur, tarsus unsegmented, clothed below with stiff hair ; no secondary sexual characters in the ♂.

*Wing venation* (Text-fig. 276).

*Male genitalia* (Text-fig. 93) : *uncus* composed of two rounded lobes separated by a shallow depression of the hind edge of the tegumen ; *subunci* long, curved, fairly robust, tapering gradually to the apex ; *tegumen* very large, hood-shaped ; *vinculum* fairly broad, without saccus ; *inferior fultura* absent ; *valves* oblong, fused together basally for about two-fifths of their length, apex pointed, the two upper processes being connected on their inner sides by a narrow band which surrounds the penis ; *penis* elongate, subcylindrical ; *vesica* with numerous cornuti and enclosing a long cuneus which is slightly recurved ; *uncus* densely pilose, a few hairs on the distal portions of the valves.

LIST OF SPECIES OF *Hypomyrina*

*Hypomyrina acares* (Karsch), see *nomenia*.

*Hypomyrina nomenia nomenia* (Hewitson), 1874. Fig. Hewitson, 1878.

*acares* (Karsch), 1893.

\**Hypomyrina nomenia nomion* (Staudinger), 1891.

*Hypomyrina nomenia fournierae* Gabriel, 1939, *Ruwenzori Exp.* 1934-35, **3** : 74, fig.

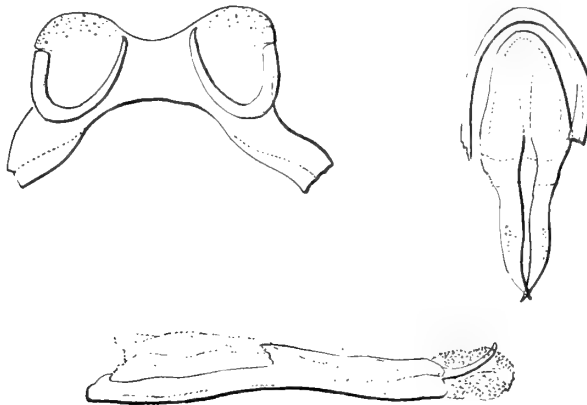


FIG. 93. *Hypomyrina nomenia* (Hewitson), ♂ genitalia.

Genus *ACTIS* Karsch

*Actis* Karsch, 1895, *Ent. Nachr.* **21** : 315. Type-species : *Actis mimeta* Karsch, selected by Hemming, 1960, *Annot. Lep.* **1** : 8.

*Deudorix* Hewitson (partim) ; Aurivillius, 1898 : 306 ; 1923 : 366.

*Eyes* large, densely but shortly pilose ; palpi rather long, ascending, second segment long, laterally compressed, with long hairs below at its base, third segment short and slender ; antennae long, slender, white annulated, club fusiform ; ♂ fore tarsus unsegmented.

*Wing shape.* Inner border of fore wing slightly lobed in basal third. The ♂ has the following secondary sexual characters : on the underside of the base of the fore wing there is a patch between vein 1 and the lower edge of the cell, and on the inner margin a small brush of tawny hairs lying along the surface of the wing and directed towards the aforementioned patch ; on the upper side of the hind wing there is a small clear silky patch between vein 8 and the origin of vein 7 and partly covered by the small lobe of the inner margin of the fore wing.

*Wing venation* (Text-fig. 277). Fore wing with 11 veins ; 10 and 11 free, from the upper edge of the cell.

*Male genitalia* (Text-fig. 94). Uncus composed of two rounded lobes separated by the median depression of the hind edge of the tegumen ; subunci rather long, slender, curving ; tegumen very large, hood-shaped ; vinculum moderately wide with an indistinct saccus ; valves very elongate, the lower process ending in a point, the upper process much shorter and folded inwards to envelope the penis, which is robust, dilated distally, its apex crowned with fine, erect spines ; vesica with many cornuti and enclosing an enormous cuneus. Uncus clothed with long fine hair, valves slightly hairy apically.

The male genitalia of *Actis ula* are similar.

LIST OF SPECIES OF *Actis*

\**Actis mimeta mimeta* Karsch, 1895, (♂). Fig. Aurivillius in Seitz, 1923.

*perigrapha* (Karsch), 1895 (♀).

*Actis mimeta unda* (Gaede), 1915.

*Actis perigrapha* (Karsch), see *mimeta*.

\**Actis ula* Karsch, 1895.

*Actis ula* ab. *nigrostriata* (Aurivillius), 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1215.

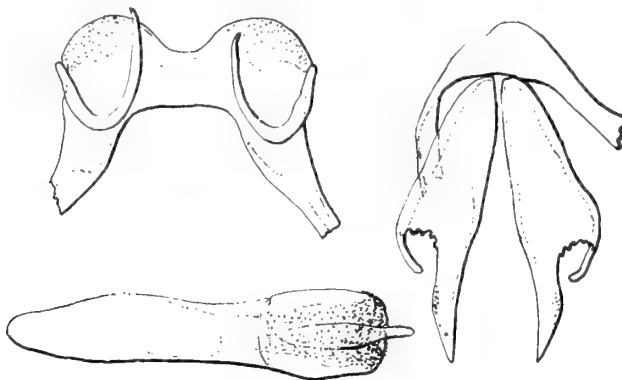


FIG. 94. *Actis mimeta mimeta* Karsch, ♂ genitalia.

Genus **KOPELATES** H. H. Druce

*Kopelates* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) 7 : 364. Type-species : *Kopelates virgata* H. H. Druce, by original designation.

*Deudorix* Hewitson (partim) ; Aurivillius, 1898 : 307 ; 923 : 366.

*Eyes* shortly and densely pilose ; palpi protruding only slightly beyond the frons, second segment long and robust, clothed below with white adpressed scales, third segment slender, acuminate ; antennae long, slender, white annulated, with an elongate fusiform club ; legs black and white annulated, ♂ fore tarsus unsegmented.

*Wing shape* : fore wing inner margin with a slight lobe near its base. Male secondary sexual characters : on the underside of fore wing there is a patch of modified scales at the base between vein 1 and the lower edge of the cell, and on the inner margin a brush of adpressed brown hairs directed towards the above patch ; on the upperside of the hind wing there is a very small creamy white spot, with yellowish centre, near the origin of vein 8.

*Wing venation* (Text-fig. 278). Fore wing with 11 veins ; 10 free, from the upper edge of the cell ; 11, to a great extent, confluent with 12.

*Male genitalia* (Text-fig. 95). Very similar to those of *Actis perigrapha* Karsch, except that the uncal lobes are not so prominent and the hind margin of the tegumen between them has only a very shallow median depression.

The genus *Kopelates* differs from the genus *Actis* only by the confluence of veins 11 and 12 in the fore wing.

LIST OF SPECIES OF *Kopelates*

*Kopelates gracilis* (Staudinger), see *virgata*.

\**Kopelates virgata* H. H. Druce, 1891 (April). Fig. (as *gracilis*) Staudinger, 1891. *gracilis* (Staudinger), 1891 (July).

Genus **HYPOKOPELATES** H. H. Druce

*Hypokopelates* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) 7 : 364. Type-species : *Hypolycaena mera* Hewitson, by original designation.

*Deudorix* Hewitson (partim) ; Aurivillius, 1898 : 306 ; 1923 : 366.

*Eyes* shortly and densely pilose ; palpi very slightly protruding beyond the frons, second segment clothed below with white adpressed scales, third segment slender, acuminate, shorter than that of the species of *Hypomyrina* ; antennae long, slender, white annulated, with a

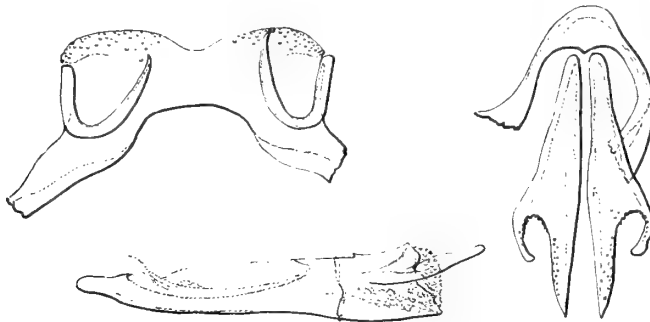


FIG. 95. *Kopelates virgata* Druce, ♂ genitalia.

gradually swollen fusiform club ; thorax clothed below with long, silky white hairs ; ♂ fore leg femur clothed with long white hairs, tibia shorter than the femur, tarsus unsegmented, bearing below small stiff bristles.

*Wing shape* : fore wing inner margin slightly lobed in its basal half. Male secondary sexual characters : on the underside of the fore wing there is a tuft of long black hairs on the inner margin at the level of its convexity ; on the upperside of the hind wing there is a matt glandular patch on the origin of vein 7.

*Wing venation* (Text-fig. 279). Fore wing with 11 veins ; 10 and 11 free, from the upper edge of the cell ; vein 8 absent.

*Male genitalia* (Text-fig. 96). Uncus composed of two lobes separated by the shallow rounded depression of the posterior edge of the tegumen ; subunci long, rather slender, strongly curved, with a very shallow apical hook ; tegumen very large hood-shaped, ; vinculum narrow with an indistinct saccus ; no lower fultura ; valves narrow, their lower edges widely fused together basally, their upper processes connected in the middle by a narrow band which surrounds the penis ; penis elongate, wide open on the upper surface proximally ; vesica bearing many cornuti, which give it a shagreened appearance, and enclosing a long cuneus ; uncus and distal parts of the valves pilose.

I have examined the male genitalia of all the *Hypokopelates*. They are very similar to those of *H. mera*, described above. In most cases they do not even present useful specific characters.

LIST OF SPECIES OF *Hypokopelates*

- \**Hypokopelates anetia* (Hulstaert), 1924, *Revue zool. afr.* **12** : 120.
- \**Hypokopelates anetta* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 76, fig.
- Hypokopelates angelita angelita* (Suffert), 1904. Fig. Aurivillius in Seitz, 1923.
- \**Hypokopelates angelita makala* (Bethune Baker), 1908.
- \**Hypokopelates angelita schultzei* (Aurivillius), 1907.
- \**Hypokopelates aruma aruma* (Hewitson), 1873. Fig. Hewitson, 1878.
- \**Hypokopelates aruma simplex* (Schultze), 1917.
- \**Hypokopelates azurea* Stempffer, 1964 : 1280, figs.
- \**Hypokopelates canescens* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 90, figs.
- \**Hypokopelates catori* (Bethune Baker), 1903, (♂) ; Stempffer, 1964 : 1280 (♀).
- \**Hypokopelates cobaltina* Stempffer, 1964 : 1271, figs.

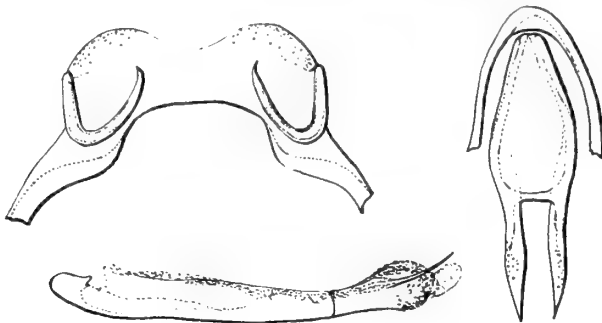


FIG. 96. *Hypokopelates mera* (Hewitson), ♂ genitalia.

- \**Hypokopelates eleala* (Hewitson), 1865.  
 \**Hypokopelates elealodes* (Bethune Baker), 1908.  
   *mariana* (Hulstaert), 1924.  
   *Hypokopelates feminina* Hulstaert, see *kafuensis*.  
   *Hypokopelates fusca* (Aurivillius), 1922 (? = *canescens* Joicey & Talbot, 1921).  
   *Hypokopelates genuba* (Hewitson), see *otraeda*.  
 \**Hypokopelates infuscata* Stempffer, 1964 : 1275, figs.  
 \**Hypokopelates ituri* (Bethune Baker), 1908.  
 \**Hypokopelates ituri* f. *lineosa* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley*  
   1 : 89.  
 \**Hypokopelates kafuensis* (Neave), 1910.  
   *feminina* (Hulstaert), 1924.  
   *Hypokopelates kallipygos* Birket Smith, 1960, *Bull. Inst. fr. Afr. noire* 22 : 974,  
   fig.  
 \**Hypokopelates leonina* (Bethune Baker), 1904.  
 \**Hypokopelates marginata* Stempffer, 1962 : 1157, figs.  
   *Hypokopelates mariana* (Hulstaert), see *elealodes* Bethune Baker.  
 \**Hypokopelates mera* (Hewitson), 1873. Fig. Hewitson, 1878.  
   *Hypokopelates mera* f. *kinumbensis* Dufrane, 1945, *Bull. Anns Soc. R. ent.*  
   *Belg.* 81 : 120.  
 \**Hypokopelates moyambina* (Bethune Baker), 1904.  
 \**Hypokopelates nyanzana* Stempffer, 1957, *Bull. Inst. fr. Afr. noire* 19 : 214, fig.  
 \**Hypokopelates obscura* Bethune Baker, 1913.  
 \**Hypokopelates otraeda* Hewitson, 1863.  
   *genuba* (Hewitson), 1875.  
 \**Hypokopelates otraeda* f. *modesta* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 77.  
 \**Hypokopelates petersi* Stempffer & Bennett, 1956, *Bull. Inst. fr. Afr. noire* 23 :  
   507, figs.  
 \**Hypokopelates tenuivittata* Stempffer, 1951, *Bull. Soc. ent. Fr.* 56 : 119, fig.  
 \**Hypokopelates ugandae* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 77.  
 \**Hypokopelates ultramarina* Stempffer, 1964 : 1272, figs.  
 \**Hypokopelates viridis* Stempffer, 1964 : 1269, figs.

## SPECIES INCERTA

*Hypokopelates rava* (Holland), 1892. (? *aruma* Hewitson ♀).

Genus *PILODEUDORIX* H. H. Druce

*Pilodeudorix* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) 7 : 366. Type-species : *Pilodeudorix barbatus* H. H. Druce, 1891 (*camerona* Plötz, 1880), by original designation.  
*Deudorix* Hewitson (partim) ; Aurivillius, 1898 : 307 ; 1921 : 369.

*Eyes* shortly and densely pilose ; *palpi* not protruding beyond the frons, second segment clothed below with erect bristles and scales, third segment slender, acuminate ; *antennae* long,



slender, with an elongate fusiform club ; ♂ fore leg, femur clothed with long white hairs, tibia shorter than the femur, tarsus unsegmented, clothed below with stiff hair.

*Wing shape.* Fore wing inner margin slightly lobed in its basal portion. Male secondary sexual characters : on underside of fore wing in the basal half a silky, shining patch which is silvery between veins 1 and 2 and violet-black between veins 2 and 3 ; on the inner margin a tuft of long black hairs directed towards this patch ; on upperside of hind wing a small whitish spot near the origin of vein 8 and, along vein 2, a tuft of very long black hairs directed towards the anal margin.

*Wing venation* (Text-fig. 280). Fore wing with 11 veins ; veins 10 and 11 free.

*Male genitalia* (Text-fig. 97). Uncus composed of two lobes separated by the rounded depression of the posterior edge of the tegumen ; subunci long and bent about mid-length ; tegumen very large, hood-shaped ; vinculum narrow ; no lower futura ; valves oblong, fused at the base, distal half digitate, upper edges folded in and connected by a membrane which surrounds the penis ; penis elongate, subcylindrical, the external portion much shorter than the internal portion ; vesica enclosing an enormous cuneus ; uncus and apices of valves pilose.

The male genitalia of all the species of *Pilodeudorix* that I have examined are very similar to those of *camerona*, described above.

The caterpillars of *P. camerona* and *P. diyllus* live among ants on flowers of *Pterocarpus esculentus* Schumach (Leguminosae), see Farquharson, 1922, *Trans. ent. Soc. Lond.* 1921 : 381.

LIST OF SPECIES OF *Pilodeudorix*

- \**Pilodeudorix ankoleensis* Stempffer, 1953, *Annls Mus. R. Congo belge* 27 : 21.
- camerona ugandae* Stempffer, 1946.
- \**Pilodeudorix barbatus* H. H. Druce, see *camerona*.
- \**Pilodeudorix bamba* (Neave), 1910.
- \**Pilodeudorix caerulea caerulea* (H. H. Druce), 1890. Fig. Aurivillius in Seitz, 1921.
- hollandi* Ehrman, 1894 (*Argiolaus*).
- \**Pilodeudorix caerulea obscurata* (Trimen), 1891.

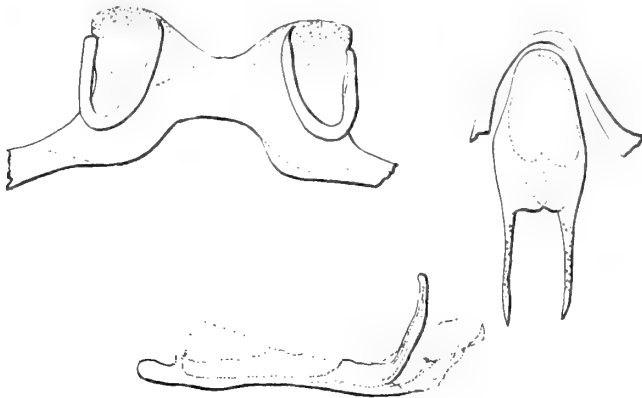


FIG. 97. *Pilodeudorix camerona* (Plötz), ♂ genitalia.

- \**Pilodeudorix camerona camerona* (Plötz), 1880. Fig. Aurivillius in Seitz, 1921. *barbatus* H. H. Druce, 1891; *nobilis* (Staudinger), 1891.  
*Pilodeudorix camerona katanga* Clench, 1966, *Jl N.Y. ent. Soc.* **73** : 178.  
*Pilodeudorix camerona ugandae* Stempffer, see *ankoleensis*.  
*Pilodeudorix congoana* (Aurivillius), 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1218.  
*Pilodeudorix debilis* (Staudinger), see *diyllus*.  
 \**Pilodeudorix diyllus diyllus* (Hewitson), 1878. *debilis* (Staudinger), 1891.  
 \**Pilodeudorix diyllus orientalis* Stempffer, 1957, *Bull. Inst. fr. Afr. noire* **19** : 217.  
*Pilodeudorix hollandi* Ehrman, 1894, see *caerulea*.  
 \**Pilodeudorix kohli* (Aurivillius), 1921 (♂); Stempffer, 1962 : 1159, (♀).  
*Pilodeudorix nobilis* (Staudinger), see *camerona*.  
*Pilodeudorix simplex* (Staudinger), see *zela*.  
 \**Pilodeudorix zela zela* (Hewitson), 1869. *simplex* (Staudinger), 1891.  
 \**Pilodeudorix zela zeloides* (Butler), 1901.  
 \**Pilodeudorix zelomina* (Rebel), 1914.

### Genus *DIOPETES* Karsch

*Diopetes* Karsch, 1895, *Ent. Nachr.* **21** : 317. Type-species : *Deudorix deritas* Hewitson, by original designation.

*Deudorix* Hewitson (partim); Aurivillius, 1898 : 307; 1921 : 371.

*Eyes* shortly and densely hairy; palpi moderately long, scarcely protruding beyond the frons, second segment clothed below with long, erect scales, third segment slender with a blunt apex; antennae long, slender, with a fusiform club; ♂ fore tarsus unsegmented.

*Wing shape.* Fore wing outer margin very convex, inner margin with a lobe in its basal half. Male secondary sexual characters : on the underside of the fore wing, level with the lobe of the inner margin, there is a strong tuft of black lying close against the wing; on the upperside of the hind wing there is a large matt yellowish rounded spot between the upper edge of the cell and

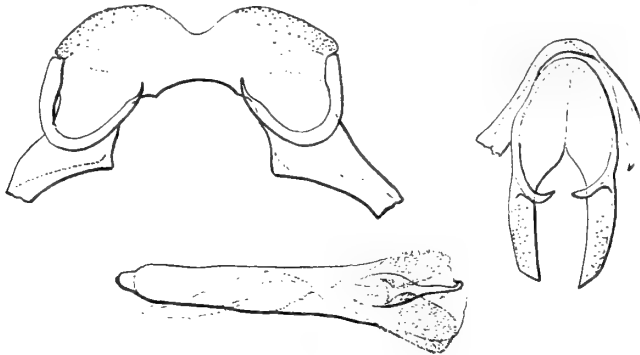


FIG. 98. *Diopetes deritas* (Hewitson), ♂ genitalia.

the origin of vein 8, covering the origin of vein 7, and visible as a slight circular prominence on the underside ; in the normal position of the wings it is to a great extent covered by the lobe of the inner margin of the fore wing.

*Wing venation* (Text-fig. 281). Fore wing with 11 veins ; 10 and 11 free, from the upper edge of the cell.

*Male genitalia* (Text-fig. 98). Uncus composed of two flattened lobes separated by the shallow depression of the posterior margin of the tegumen ; subunci fairly robust, long, bent at about mid-length ; tegumen very large, hood-shaped ; vinculum wide dorsally, narrow ventrally ; no lower valvula ; valves oblong with pointed apices, the lower edge of each straight, the upper edge convex with a small median process which is normally folded down over the inner surface, the two processes being united by a delicate membrane which surrounds the penis as in the preceding genera ; penis elongate, widely open in the dorsal surface of the inner portion ; the vesica bears numerous cornuti giving it a shagreened appearance, and encloses an enormous cuneus which has a hook-shaped, recurved apex ; uncus and apices of valves pilose.

The male genitalia of all the species of *Diopetes* examined closely resemble those of *D. deritas*.

LIST OF SPECIES OF *Diopetes*

- \**Diopetes aucta* Karsch, 1895.
- \**Diopetes aurivilliusi* Stempffer, 1954, *Bull. Soc. ent. Fr.* 59 : 106.
- \**Diopetes bwamba* Stempffer, 1962 : 1161, figs.
- \**Diopetes catalla* Karsch, 1895, (♂). Fig. Aurivillius in Seitz, 1921 ; fig. ♀, Stempffer, 1954, *Bull. Soc. ent. Fr.* 59 : 105.
- \**Diopetes corruscans* (Aurivillius), 1897. Fig. Aurivillius in Seitz, 1921.
- \**Diopetes deritas* (Hewitson), 1874. Fig. Hewitson, 1878.
- \**Diopetes fumata* Stempffer, 1954, *Bull. Soc. ent. Fr.* 59 : 107, fig.
- \**Diopetes kedassa* H. H. Druce, 1910.
- Diopetes laticlavata* Clench, 1965, *Jl N.Y. ent. Soc.* 73 : 180.
- Diopetes nirmo* Clench, 1965, l.c. : 179.
- Diopetes pasteon* H. H. Druce, 1910.
- \**Diopetes pseudoderitas* Stempffer, 1964 : 1283, fig.
- Diopetes sadeska* Clench, 1966, l.c. : 179.
- \**Diopetes violetta* (Aurivillius), 1897. Fig. Aurivillius in Seitz, 1921.

Genus *VIRACHOLA* Moore

*Virachola* Moore, 1881, *Lep. Ceylon* 1 : 104. Type-species : *Deudorix perse* Hewitson, 1862, (Indo-Malayan species), by original designation.

*Deudorix* Hewitson (partim) ; Aurivillius, 1898 : 308 ; 1921 : 373 ; Murray 1935 : 60 ; Pinhey, 1949 : 98 ; Swanepoel, 1953 : 159.

*Eyes* shortly and densely hairy ; palpi hardly protruding beyond the frons, second segment shorter than in species of *Deudorix*, laterally compressed, clothed below with adpressed scales, third segment very short with rounded apex ; antennae about two-thirds the length of the costa, club gradually swollen, fusiform ; thorax very robust, hairy above and below ; ♂ fore leg with femur hairy, tibia shorter than femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing in the ♂, apex very pointed, outer margin straight, even slightly concave between the ends of veins 3 and 1, inner margin lobed in its basal half ; in the ♀ the apex is less pointed and the outer margin more convex, the inner margin not lobed. Male

secondary sexual characters : on underside of fore wing there is a tuft of long hairs on the inner margin on a level with the lobe ; on the upper side of the hind wing there is a matt glandular patch below vein 8 and covering the origins of veins 6 and 7.

*Wing venation* (Text-fig. 282). Fore wing with 11 veins ; 10 and 11 free, from the upper edge of the cell.

*Male genitalia* (Text-fig. 99). Uncus composed of two lobes separated by the rounded depression of the posterior margin of the tegumen ; subunci long, robust, bent at an acute angle, suddenly narrowed in the apical quarter of their length, and on the lower edge, level with the bend, there is a small pointed apophysis ; tegumen large, hood-shaped ; vinculum rather narrow with a small round saccus ; no lower fultura ; valves small compared with the other parts, their proximal halves broadly fused together along their lower margins, the distal third consisting of two finger-like processes which are slightly recurved, their upper edges connected on the inner side by a membrane ; penis elongate, subcylindrical, slightly dilated at the apex ; vesica bearing a series of cornuti ; uncus and distal portions of the valves pilose.

I have been able to examine the male genitalia of nearly all the African species of *Virachola*. Except in some details, they are of the same type as those of *V. perse*, described above. The subunci carry a small apophysis in *caliginosa*, *odana*, *galathea*, *dinomenes*, *dinochaes*, *lorisona*, *diocles*, *dariaves*, *wardii* and *batikeli*. The subunci of the other species lack this apophysis. The valves are short, blade-shaped and fused together for almost their entire length in *livia*, *suk*, *ecaudata*, *caliginosa*, *vansoni*, *penningtoni* and *antalus*. In the other species they taper more and their general shape recalls the valves of the preceding genera.

The early stages of several species of *Virachola* have been described, see Aurivillius, 1921 : 375 ; Murray, 1935 : 61-3 ; Farquharson, 1921, *Trans. ent. Soc. Lond.* 1921 : 377-8 ; Jackson, 1937, *Trans. R. ent. Soc. Lond.* 86 : 211 ; Pinhey, 1949 : 98-99. As a general rule the caterpillars of species of *Virachola* live in the pods of Mimosaceae and Papilionaceae ; the caterpillar of *V. antalus* seems polyphagous as it has been found on *Crotalaria capensis*, *Canavalia ensiformis* and *Acacia stenocarpa*. The caterpillar of *V. jacksoni* on the other hand feeds on the young leaves of *Loranthus usuiensis* and that of *V. dinochaes* on the fruits of *Syzygium cordatum*.

At this point it is opportune to examine the group of Ethiopian genera erected by the subdivision of the genus *Deudorix*. To me it does not seem that their characteristics taken as a whole allow a clear-cut separation.

Eyes, palpi and antennae are closely alike in all the genera. In wing shape, the fore wing of the male is triangular with a straight costa, apex pointed, outer margin almost straight in *Pilodeudorix* and *Virachola* (although in *V. odana*, *V. diocles* and

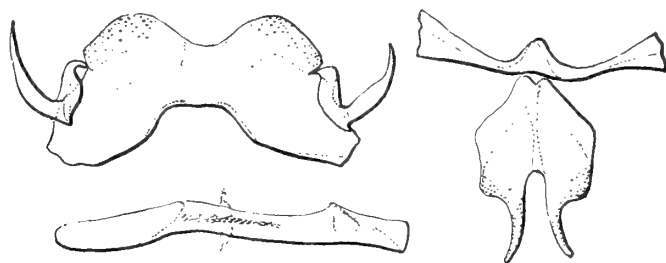


FIG. 99. *Virachola perse* (Hewitson), ♂ genitalia.

*V. galathea* the apex is less pointed and the outer margin slightly convex) ; costa slightly convex, apex gently rounded, outer margin more or less convex in species of *Hypomyrina* and *Hypokopelates* ; outer margin distinctly convex in species of *Actis*, *Kopelates* and *Diopetes*. In all the genera the hind wing is lobed between the end of vein 1b and the anal angle, tailed at the end of vein 2, and the outer margin is more or less angular at the end of vein 3. However, a single exception is provided by *V. ecaudata* (*dohertyi* B. Baker) which lacks a tail. Male secondary sexual characters are present in all the genera except *Hypomyrina*.

Venation, except for some minor details, is identical in all the genera, with the exception of *Kopelates*, where veins 11 and 12 of the fore wing are anastomosed, but I do not think that much stress should be laid on this character because I have found the same peculiarity in a specimen of *Hypokopelates eleala* Hewitson.

The male genitalia are of a uniform type in all the genera ; however, in species of *Virachola* the penis is generally more elongate and the subunci shorter and more robust, often bearing a small apophysis on the lower edge.

None of these characters seems to me to be of real generic value. I agree with Aurivillius, who concluded that all these subdivisions of *Deudorix* were at most subgenera or even only simple groups of species.

LIST OF SPECIES OF *Virachola*

*Virachola alticola* (Aurivillius), see *lorisona*.

*Virachola anta* Trimen, see *antalus*.

*Virachola antalus antalus* (Hopffer), 1855. Fig. Hopffer, 1862 ; Stempffer, 1938, *Mission Omo* 4 : 179 (genitalia).

*anta* (Trimen), 1862 ; *gambius* (Mabille), 1885.

*Virachola antalus kitobolensis* (Strand), 1912.

*Virachola badhami* (Carcasson), 1961, *Occ. Pap. Coryndon meml Mus.* 7 : 19, fig.

*Virachola baronica* (Ungemach), 1932, *Mem. Soc. Sci. nat. phys. Maroc* 82, fig.

*Virachola batikeli* (Boisduval), 1833.

*licinia* (Mabille), 1878 ; *derona* (Smith), 1891.

*Virachola batikeli* ab. *tsiphana* (Boisduval), 1833.

*Virachola batikelides* (Holland), 1920, *Bull. Am. Mus. nat. Hist.* 43 : 221, fig.

*Virachola bimaculata* (Hewitson), see *lorisona*.

\**Virachola caliginosa* (Lathy), 1903. Fig. genitalia, Gifford, 1963, *Entomologist* 96 : 46.

*Virachola chalybeata* (Joicey & Talbot), 1926, *Entomologist* 59 : 225.

\**Virachola dariaves* (Hewitson), 1877. Fig. Hewitson, 1878.

*Virachola derona* (Smith), see *batikeli*.

\**Virachola dinochares dinochares* (Smith), 1887. Figs. Monteiro, 1891 ; Stempffer, 1938, *Mission Omo* 4 : 179, (genitalia).

*licinia* (Trimen), nec Mabille, 1887.

\**Virachola dinochares rhodesiensis* (Stevenson), 1937, *Occ. Pap. natn. Mus. Sth. Rhod.* 6 : 21.

\**Virachola dinomenes* (Smith), 1887.

- \**Virachola diocles diocles* (Hewitson), 1869.  
*Virachola diocles vosseleri* (Strand), 1911.  
*Virachola diomedes* Jackson, 1965 *Ann. Mag. nat. Hist.* (13) **8** : 528, fig.  
*Virachola diopolis* (Hewitson), see *wardii*.  
*Virachola dohertyi* (Bethune Baker), see *ecaudata*.
- \**Virachola ecaudata* (Gifford), 1963, *Entomologist*, **96** : 43.  
*dohertyi* (Bethune Baker), 1905 (homonym).  
*Virachola edwardsi* Gabriel, 1939, *Ruwenzori Exp.* : 74, fig.
- \**Virachola galathea* (Swainson), 1821-22.  
*Virachola gambius* Mabilie, see *antalus*.
- \**Virachola jacksoni* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 206 (♂) ;  
 Passkewsky, 1937, *Bull. Soc. ent. Fr.* **42** : 106 (♀).
- \**Virachola kayonza* Stempffer, 1956 : 31, figs.  
*Virachola licinia* (Mabilie), see *batikeli*.  
*Virachola licinia* (Trimen), nec Mabilie, see *dinochares*.
- \**Virachola livia* (Klug), 1834. Figs. Aurivillius in Seitz, 1921 ; Stempffer, 1938,  
*Mission Omo* **4** : 178, (genitalia).
- \**Virachola lorisona lorisona* (Hewitson), 1863 (♂).  
*bimaculata* (Hewitson), 1874 (♀), fig. Hewitson, 1878 ; *alticola* (Aurivillius),  
 1923 (♀).  
*Virachola lorisona* f. *albifrons*, Stempffer, 1948, *Revue fr. Ent.* **15** : 185.  
*Virachola lorisona* f. *immaculata*, (Hawker Smith), 1928, *Revue Zool. Bot.*  
*af.* **16** : 215.  
*Virachola lorisona* f. *obliterata*, (Hawker Smith), 1928, *Revue Zool. Bot.*  
*af.* **16** : 215.  
*Virachola lorisona coffea* Jackson, 1965, l.c. : 529, fig.
- \**Virachola lorisona sesse* Stempffer & Jackson, 1962, *Proc. R. ent. Soc. Lond.*  
 (B) **31** : 34.
- \**Virachola magda* Gifford, 1963, *Entomologist* **96** : 46.  
*Virachola nicephora* (Hulstaert), 1924, *Revue zool. afr.* **12** : 122. Fig. genitalia,  
 Gifford, 1963, *Entomologist* **96** : 44.
- \**Virachola odana* (H. H. Druce), 1887. Fig. Seitz, 1921 (♂), Bethune Baker,  
 1921 (♀).
- \**Virachola penningtoni* (van Son), 1949, *Annls Transv. Mus.* **21** : 213, fig.  
*Virachola renidens* (Mabilie), 1884. Fig. Lathy, 1926, *Lepidoptera* **2** : 35.  
*Virachola rutila* (Mabilie), see *wardii*.  
*Virachola rutilans* (Mabilie), see *wardii*.
- \**Virachola suk* Stempffer, 1948, *Revue fr. Ent.* **15** : 186, fig.
- \**Virachola vansomereni* Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 120, fig. Fig.  
 Stempffer, 1952, *Bull. Soc. ent. Fr.* **57**, pl. 1.
- \**Virachola vansoni* (Pennington), 1948, *J. ent. Soc. sth. Afr.* **10** : 165, fig. Fig.  
 genitalia, Gifford, 1963, *Entomologist* **96** : 44.
- \**Virachola wardii* (Mabilie), 1878.  
*diopolis* (Hewitson), 1878 ; *rutila* (Mabilie), 1878 ; *rutilans* (Mabilie), 1885.

Genus *MYRINA* Fabricius

*Myrina* Fabricius, 1807, *Illiger Mag.* **6** : 286 ; Aurivillius, 1898 : 310 ; 1922 : 377 ; Murray, 1935 : 65 ; Pinhey, 1949 : 99 ; Swanepoel, 1953 : 169. Type-species : *Papilio alcides* Cramer, selected by Kirby, 1870, *J. linn. Soc. Lond. (Zool.)* **10** : 500.

*Eyes* naked ; frons clothed with scales and short hairs ; palpi very long, parallel, densely clothed with adpressed scales and hair, second segment long and robust, slightly ascending, third segment conical, horizontal ; antennae short, thick, without a distinct club, blunt-ended ; thorax long, robust, the patagia long and hairy ; ♂ fore leg strong, femur robust, hairy, tibia shorter than femur, tarsus unsegmented, finely spinose below ; mid and hind legs robust, femora hairy, tibiae shorter than femora, tarsi longer than tibiae, spiny beneath, the metatarsus half the length of the whole tarsus.

*Wing shape.* Hind wing oval, drawn out at the anal angle, outer margin convex, a long spatulate tail at the end of vein 1b slightly twisted, and with a lobe at the base on its abdominal margin.

*Wing venation* (Text-fig. 283).

*Male genitalia* (Text-fig. 100). Uncus shaped like a wide flattened triangle with the posterior edge as its base, this edge bearing in the middle three pointed processes, the whole resembling a trident ; subunci long, curved, rather slender ; tegumen large ; in the natural position uncus and tegumen together take the shape of a hood ; vinculum narrow ventrally, without a saccus ; inferior fulcrum shaped like a furca with long, curved arms ; valves oblong, small compared with the dorsal structures, their upper process with a serrated apex, and folded inwards ; penis elongate, slightly curving, open dorsally in its internal portion, external portion very short ; uncus and distal portion of the valves finely pilose.

As I have pointed out (1943, *Ann. Soc. ent. Fr.* **1942** : 117) the male genitalia of *M. ficedula* are identical with those of *M. silenus* and it is probable that *ficedula* is a subspecies of *silenus*.

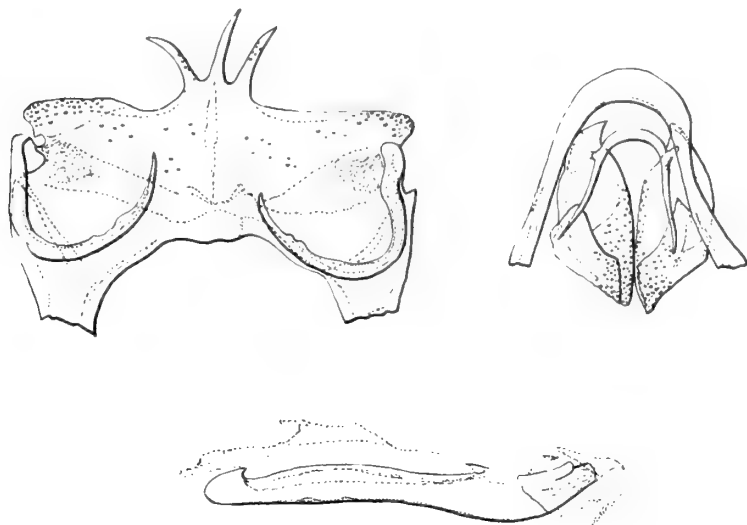


FIG. 100. *Myrina silenus silenus* (Fabricius), ♂ genitalia.

*M. dermaptera*, male genitalia (Text-fig. 101). Uncus well developed, trapezoidal, posterior edge deeply notched; subunci long, curved, uniformly tapered; tegumen large, united to the uncus by a lightly chitinized zone; vinculum broad; lower fultura with small curved arms; valves small compared with the dorsal structures, oblong, the edge of the lower process slightly serrated before the apex which has the shape of an open hook; penis as in *M. silenus*; a few hairs on the uncus and on the distal portion of the valves. The male genitalia of *M. subornata* are identical with those of *M. dermaptera*; again I think that they are perhaps two races of the same species. The armature of *M. sharpei* differs from that of *dermaptera* only in its shorter and more curved penis.

The early stages of *Myrina* are fairly well known. The caterpillars of *M. silenus* and *M. subornata* have been described by Farquharson (1911, *Trans. ent. Soc. Lond.* **1911** : 99); Lamborn (1913, *Trans. ent. Soc. Lond.* **1913** : 472) and by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 212); those of *M. ficedula* and *M. dermaptera* by Murray (1935 : 14, 66, fig. 18) and Pinhey (1949 : 101). They feed on wild and cultivated *Ficus*; they possess dorsal glands and are tended by ants of the genera *Camponotus* and *Pheidole*.

#### LIST OF SPECIES OF *Myrina*

- Myrina alcides* (Cramer), see *silenus*.  
*Myrina anettae* Fleury, 1924, *Bull. Soc. ent. Fr.* **1924** : 161.  
 \**Myrina dermaptera dermaptera* (Wallengren), 1857. Fig. Hewitson, 1863.  
*Myrina dermaptera nyasae* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 78.  
 \**Myrina silenus silenus* (Fabricius), 1775. Fig. Aurivillius in Seitz, 1922.  
*alcides* (Cramer), 1776.  
*Myrina silenus* ab. *corax* (Cramer), 1781.  
 \**Myrina silenus fidecula* Trimen, 1879. Fig. Aurivillius in Seitz, 1922.  
*Myrina silenus nzoiae* Stoneham, 1937, *Bull. Stoneham Mus.* **34** : 2.  
 \**Myrina sharpei sharpei* Bethune Baker, 1906. Fig. Aurivillius in Seitz, 1922.

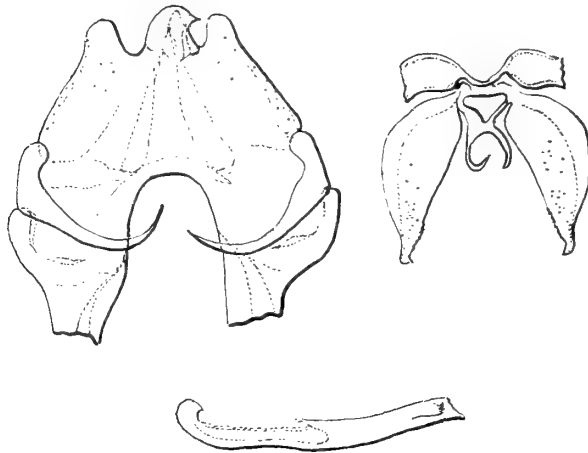


FIG. 101. *Myrina dermaptera* (Wallengren), ♂ genitalia.



\**Myrina sharpei fontainei* Stempffer, 1961 : 54, fig.

\**Myrina subornata subornata* Lathy, 1903.

*Myrina subornata nuba* Talbot, 1935 *Entomologist's mon. Mag.* 71 : 78.

Genus *PSEUDALETIS* H. H. Druce

*Pseudaletis* H. H. Druce, 1888, *Entomologist's mon. Mag.* 24 : 259 ; Aurivillius, 1898 : 311 ; 1922 : 378. Type-species : *Pseudaletis agrippina* H. H. Druce, by original designation.

Eyes naked ; palpi extremely small, hardly visible, clothed with scales ; antennae rather short, robust, swelling gradually to a poorly differentiated club ; thorax robust ; abdomen long, in the ♀ apically swollen and bearing a dense tuft of hairs, which are probably of use to cover the eggs when laid ; ♂ fore tarsus unsegmented.

*Wing shape.* Fore wing proportionally more developed than the hind wing ; hind wing oval, produced at the anal angle, a delicate tail at the end of each of the veins 2 and 1b.

*Wing-venation* (Text-fig. 284). The venation is not entirely uniform throughout the genus. In *clymenus* veins 3 and 4 of the hind wing are briefly stalked and 7 arises from the upper angle of the cell.

*Male genitalia* (Text-fig. 102). Uncus composed of four digitate processes with rounded apices ; no subunci ; tegumen subrectangular, in its normal position hood-shaped, so that the two side processes of the uncus are below the middle processes when the genitalia *in situ* are looked at from the side ; vinculum wide, prolonged to form a rounded saccus ; lower fultura composed of two subtriangular pieces fused to the middle of the valves ; valves oblong with blunt apices, the upper processes being connected in the middle of the inner surface by a membrane which lies above the penis ; penis very swollen, bulbous at the base, the external part subcylindrical and bearing on its dorsal surface an irregular prominence ; vesica with many fine cornuti ; genitalia almost bare, just a few hairs on the uncus and the apices of the valves.

Owing to the scarcity of specimens of *Pseudaletis* in most European collections, I have had no opportunity of examining more than the six species indicated below. In all these species the male genitalia are the same as in *agrippina*. The processes forming the uncus vary a little in size and are sometimes tapered, as in *clymenus*, but

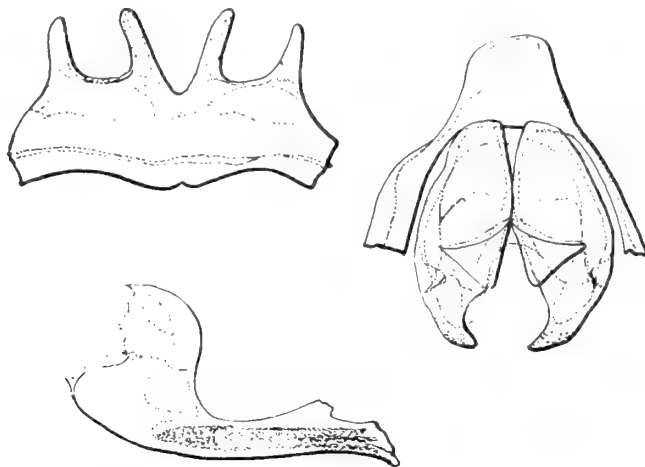


FIG 102. *Pseudaletis agrippina* Druce, ♂ genitalia.

the valves and penis are closely similar. The genus *Pseudaletis* seems very homogeneous. Although the dorsal structures are very characteristic, the form of the penis, the lower fultura and the valves seems to indicate an affinity with the group containing *Aphnaeus*, *Spindasis* etc. Indeed, Druce, who had not examined the genitalia, began his generic description with the words "allied to *Spindasis*". The view held by Aurivillius, who placed *Pseudaletis* amongst the undoubted Theclinae, seems to me to be erroneous.

#### LIST OF SPECIES OF *Pseudaletis*

- \**Pseudaletis agrippina* H. H. Druce, 1888. Fig. Staudinger, 1891 (as *tricolor*).
- Pseudaletis angustimargo* Hawker Smith, 1926, *Revue zool. afr.* **14** : 240.
- Pseudaletis antimachus* (Staudinger), 1888.
- Pseudaletis arrhon* H. H. Druce, 1913.
- Pseudaletis batesi* H. H. Druce, 1910.
- Pseudaletis busoga* van Someren, 1939, *Jl E. Africa Uganda nat. Hist. Soc.* **14** : 174, fig.
- Pseudaletis catori* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 393.
- \**Pseudaletis clymenus* (H. H. Druce), 1885. Fig. Holland, 1893.  
*zebra* Holland, 1891.
- Pseudaletis clymenus subangulata* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 115, figs.
- Pseudaletis dardanella* Riley, 1922, *Entomologist* **55** : 251.
- \**Pseudaletis leonis* (Staudinger), 1888. Fig. Aurivillius in Seitz, 1922.  
*trifasciata* Sharpe, 1890.
- Pseudaletis lusambo* Stempffer, 1961 : 61, fig.
- Pseudaletis mazanguli* Neave, 1910.
- \**Pseudaletis nigra nigra* Holland, 1892. Fig. Holland, 1893.  
*occidentalis* Bethune Baker, 1926.
- \**Pseudaletis nigra fontainei* Stempffer, 1961 : 60, figs.
- Pseudaletis occidentalis* Bethune Baker, see *nigra*.
- \**Pseudaletis richardi* Stempffer, 1952, *Mém. Inst. fr. Afr. noire* **19** : 146, fig.
- Pseudaletis spolia* Riley, 1922, *Entomologist* **55** : 250.
- Pseudaletis tricolor* (Staudinger), see *agrippina*.
- Pseudaletis trifasciata* Sharpe, see *leonis*.
- \**Pseudaletis ugandae* Riley, 1928, *Entomologist* **61** : 187.
- Pseudaletis zebra* Holland, see *clymenus*.

#### Genus *OXYLIDES* Hübner

*Oxylides* Hübner, 1816, *Verzeichniss* : 77. Type-species : Hübner, without designating a type-species, included two species in his genus *Oxylides*, viz : *Papilio celmus* Cramer and *P. faunus* Drury. Of these, *Papilio faunus* was selected as type of the genus *Oxylides* by Scudder, 1875, *Proc. Am. Acad. Arts Sci.* **10** : 234.

*Oxylides* Hübner (partim) ; Aurivillius, 1898 : 312 ; 1922 : 380.

*Eyes* naked ; palpi only slightly protruding beyond the frons, second segment laterally compressed and clothed below with adpressed scales, third segment slender, acuminate ; antennae slender, about half as long as the costa, white-annulated, club very slightly swollen and with pointed apex ; thorax moderately robust ; abdomen short, clothed ventrally with silky, white hairs ; legs slender, black and white-annulated, ♂ fore tarsus unsegmented.

*Wing shape.* Fore wing short and broad, costa very convex, outer margin very convex, inner margin straight ; hind wing outer margin slightly toothed at the end of veins 6, 5 and 4 ; three unequal tails, one each at the ends of veins 3, 2 and 1b, the one at vein 2 much longer than the others.

*Wing venation* (Text-fig. 285). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 103). Uncus composed of two subtriangular lobes separated by the depression of the posterior margin of the tegumen ; subunci extremely robust, only slightly curved, and bearing on the lower edge of its distal third a well marked tooth ; tegumen rather large ; vinculum broad dorsally, narrow ventrally and prolonged to form a long tapering saccus ; lower fulcrum composed of a small lamella with rounded apex ; valves small, oblong, with slightly spatulate apices ; penis elongate, slightly curved, inner part swollen, outer part tapering gradually ; a few hairs on the uncus and apices of the valves.

The male genitalia of *bella* and *gloveri* are very similar to those of *faunus*.

LIST OF SPECIES OF *Oxylides*

- \**Oxylides bella* Aurivillius, 1898.
- \**Oxylides faunus faunus* (Drury), 1773.  
*hesiodus* (Fabricius), 1793.
- \**Oxylides faunus albata* (Aurivillius), 1895.  
*feminina* Sharpe, 1904.
- Oxylides faunus* ab. ♀ *caerulescens* Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr.*  
*Exp.* 1910-II, 1 : 1121.
- Oxylides feminina* Sharpe, see *faunus albata*.
- Oxylides gloveri* Hawker Smith, 1929, *Bull. Hill Mus. Witley* 3 : 234.
- Oxylides hesiodus* (Fabricius), see *faunus*.

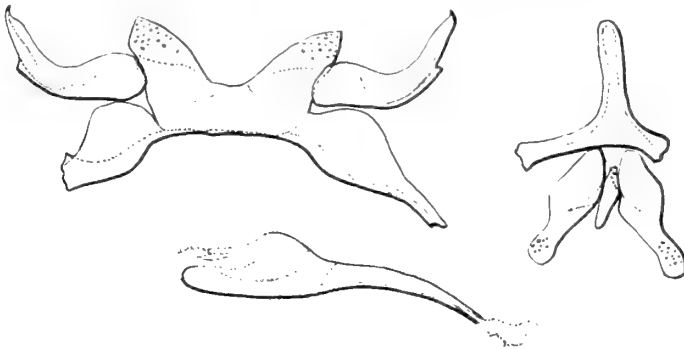


FIG. 103. *Oxylides faunus faunus* (Drury), ♂ genitalia.

Genus *SYRMOPTERA* Karsch

*Syrmoptera* Karsch, 1895, *Ent. Nachr.* **21** : 308. Type-species : *Syrmoptera melanomitra* Karsch, by original designation.

*Oxylides* (partim) ; Aurivillius (nec Hübner), 1898 : 312 ; 1922 : 381.

*Eyes* naked ; palpi distinctly protruding beyond the frons, second segment laterally compressed, clothed with large white scales, third segment fairly long, acuminate ; antennae about half as long as the costa, black and white-annulated, each segment much longer than wide, a well differentiated cylindrical club ; thorax clothed below with white silky hairs ; legs : tibia and tarsi black and white-annulated, ♂ fore leg with femur clothed with white hairs, tibia shorter than femur, tarsus unsegmented.

*Wing shape.* Fore wing more triangular than in *Oxylides*, the apex less rounded ; hind wing with three long slender tails, one each at the ends of veins 3, 2 and 1b, those at 2 and 1b subequal, the one at the end of 3 decidedly the shortest.

*Wing venation* (Text-fig. 286). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 104). Uncus composed of two subtriangular lobes ; subunci very robust, curved, without apical hook, on the lower edge in the distal third with a strong, blunt tooth ; tegumen very large, posterior edge with a rounded depression ; vinculum fairly broad prolonged to form a large saccus ; lower fultura represented by a small lamella hollowed out at the apex ; valves much reduced in size, broadly fused to the vinculum and ending in a small rounded lobe ; penis elongate, proximally swollen and flask-shaped, cylindrical and slightly curved externally with a slightly dilated apex ; a few hairs on the uncus and on the apices of the valves.

The male genitalia of *S. homeyeri*, *S. amasa*, *S. nivea* and *S. bonifacei* are almost identical with those of *S. melanomitra*. Only the form of the valves differs from one to another.

The genus *Syrmoptera* is very close to the genus *Oxylides*, the only difference being in the shape and colour of the wings.

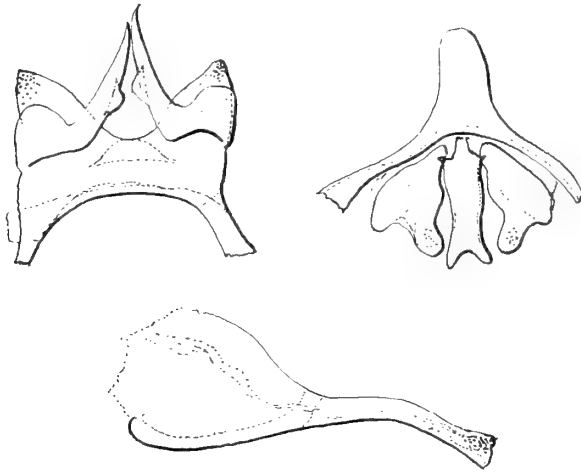


FIG. 104. *Syrmoptera melanomitra* Karsch, ♂ genitalia.

LIST OF SPECIES OF *Syrmoptera*

- \**Syrmoptera amasa* (Hewitson), 1869, (♀). Fig. Stempffer, 1961 : 56 (♂).
- \**Syrmoptera bonifacei* Stempffer, 1961 : 57.
- \**Syrmoptera homeyeri* (Dewitz), 1879.  
*mixtura* Hulstaert, 1924.
- \**Syrmoptera melanomitra* Karsch, 1895. Fig. H. H. Druce, 1910.  
*Syrmoptera mixtura* Hulstaert, see *homeyeri*.
- \**Syrmoptera nivea* Joicey & Talbot, 1924, *Bull. Hill Mus. Witley* 1 : 544.  
*Syrmoptera nivea* ♀-f. *androgyna* Joicey & Talbot, 1924, l.c. : 545.

Genus *HYPOLYCAENA* Felder

*Hypolycaena* Felder, 1862, *Wien. ent. Monats.* 6 : 293. Type-species : *Myrina sipylus* Felder, 1860, selected by Scudder, 1875.

*Hypolycaena* Felder (partim) ; Aurivillius, 1898 : 313 ; 1922 : 381 ; 1923 : 385 ; Murray, 1935 : 70 ; Pinhey, 1949 : 101 ; Swanepoel, 1953 : 180.

*Zeltus* de Nicéville, 1890, *Butt. India* 3 : 19, 399.

Eyes densely clothed with short hair ; palpi long, ascending, slightly divergent, the second segment laterally compressed and clothed with long erect scales, third segment almost as long as the second, delicate, with sharp apex ; antennae long and slender, white-ringed, each segment much longer than wide, club elongate, well defined ; ♂ fore leg rather long, the femur clothed in long white hair, tibia and tarsus also white-ringed, the latter unsegmented ; mid and hind legs with femora clothed in long white hair, tibiae white-ringed and shorter than the femora, first segment of tarsus very long.

*Wing shape.* The shape of the hind wing is not uniform. According to it the species may be arranged in three groups, as follows :

- a. tail at vein 1b only slightly longer than that at vein 2 ; outer margin angled at vein 3 :  
*H. auricostalis*, *H. philippus*, *H. pachalica*.
- b. tail at 1b much longer than tail at 2 ; outer margin angled at vein 3 :  
*H. sipylus*, *H. hatita*, *H. nigra*, *H. buxtoni*, *H. amanica*, *H. jacksoni*.
- c. tail at 1b very long, sometimes longer than the wing ; a short tail at vein 3 :  
*H. antifaunus*, *H. lebona*, *H. dubia*, *H. naara*, *H. liara*.

For the Indo-Malayan *H. etolus* Fabricius, which has a very long tail at 1b, de Nicéville erected the genus *Zeltus*, which has been used by some authors for such African species as *lebona* and *antifaunus* which have very long tails. But as Aurivillius quite rightly pointed out (1898 : 313), *naara* and *liara* are intermediate in this respect between *etolus* and the species of the *philippus* group. It seems to me therefore that no useful purpose is served by cutting up the genus *Hypolycaena*, which is homogeneous both in wing venation and male genitalia.

Butler (1887 : 572) introduced the generic name *Tatura* initially for *lebona* only. Later (1896 : 123) he also included the African species *buxtoni* and *caeculus*. He gave no generic description. Nevertheless this action, " indicating " a recognizable known species, taken at that date, renders the name *Tatura* available. However, the name has been used by no subsequent author, and *lebona* (its type-species) cannot be separated from other species of *Hypolycaena* either on venation or male genitalia, so it is here treated as a subjective synonym of *Hypolycaena*.

*Wing venation* (Text-fig. 287, *Hypolycaena sipylus*). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 105). Uncus formed of two roughly oval lobes; subunci long and slender, evenly curved; tegumen formed by a simple enlargement of the vinculum; in the natural position the tegumen and uncus form a hood-like structure; vinculum very wide, with a short rounded saccus; inferior fultura absent; valves small in relation to the dorsal elements, elongate with a slightly recurved tip, tapering, the upper margin bearing a rounded expansion, which represents the second point of attachment, and joined to the vinculum by a membrane; penis elongate, basally swollen, dilated distally, vesica enclosing very small cornuti which give it a shagreened appearance; uncus and distal portion of valves pilose.

The male genitalia of the African species of *Hypolycaena* are of the same pattern as those of *H. sipylus*, which is an Indo-Malayan species. The valves are always rather small in relation to the dorsal elements, but they are generally less elongate and more massive than in *sipylus*; the lobes of the uncus are oval, with rounded apices; the subunci are of the *sipylus* type in *pachalica*, *antifaunus*, *lebona* and *liara*; in *naara* they bear a small apophysis at the point of maximum curvature, and the apophysis is much more developed in *hatita*, *buxtoni*, *amanica*, *jacksoni*, *nigra*, *kadiskos*, *philippus*, and *auricostalis*. However, I do not attach any considerable taxonomic importance to the presence or absence of this apophysis, which also occurs in certain species of *Deudorix*. I figure it only in *antifaunus* (Text-fig. 106) and *nigra* (Text-fig. 107).

As I have pointed out in my original description, *ogadenensis* has male genitalia of a type very different from those of the other species of this genus. I have only placed this species in the genus *Hypolycaena* temporarily, on the basis of its wing venation, until I can study further material.

The larvae of *nigra*, *philippus* and *lebona* have been described by Lamborn (1911, *Proc. ent. Soc. Lond.* (C), and 1913, *Trans. ent. Soc. Lond.* 1913 : 473), by Jackson (1937, *Trans. R. ent. Soc. Lond.* 86 : 213) and by Pinhey (1949 : 101). They are onisciform and are tended by ants of the genera *Pheidole* and *Camponotus*.

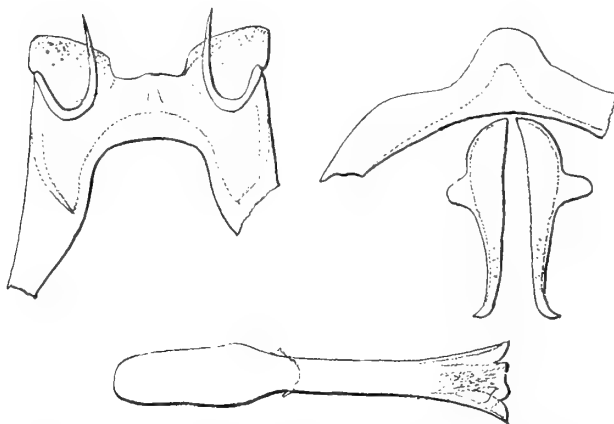


FIG. 105. *Hypolycaena sipylus* (Felder), ♂ genitalia.

LIST OF SPECIES OF *Hypolycaena*

- \**Hypolycaena amanica* Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 123, fig.
- \**Hypolycaena antifaunus antifaunus* (Doubleday & Hewitson), 1852.
- Hypolycaena antifaunus* ab. *latefasciata* Dufrane, 1953, *Bull. Annl's Soc. R. ent. Belg.* **89** : 52.
- Hypolycaena antifaunus latimaculata* (Joicey & Talbot), 1921, *Bull. Hill Mus. Witley* **1** : 94, fig.
- Hypolycaena aureolineata* Bethune Baker, see *pachalica*.
- \**Hypolycaena auricostalis auricostalis* (Butler), 1897.
- sebasta* Hulstaert, 1924.
- Hypolycaena auricostalis frommi* Strand, 1911. Fig. Aurivillius in Seitz, 1922.

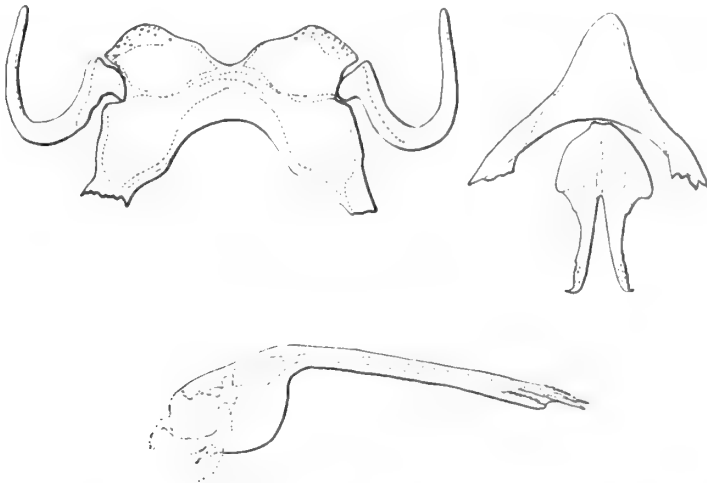


FIG. 106. *Hypolycaena antifaunus* (Doubleday & Hewitson), ♂ genitalia.

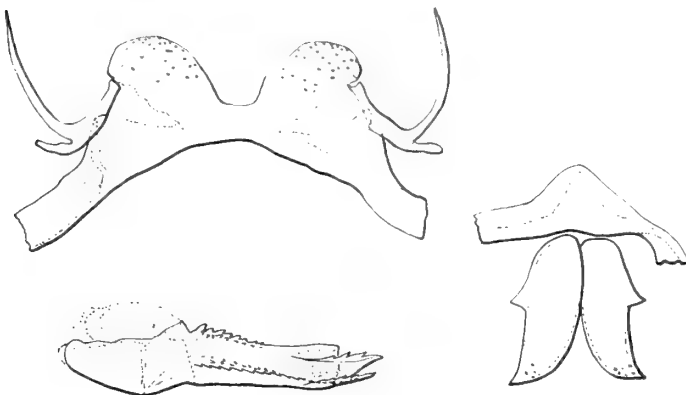


FIG. 107. *Hypolycaena nigra* Bethune Baker, ♂ genitalia.

- Hypolycaena bitjeana* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 394.
- \**Hypolycaena buxtoni buxtoni* Hewitson, 1874.  
*seamani* Trimen, 1874.
- Hypolycaena buxtoni* ♀-f. *divisa* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 116, fig.
- \**Hypolycaena buxtoni rogersi* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 131.
- \**Hypolycaena buxtoni spurcus* Talbot, 1929, *Bull. Hill Mus. Witley* **3** : 141.
- \**Hypolycaena condamini* Stempffer, 1956, *Mém. Inst. fr. Afr. noire*, **48** : 207, fig.
- Hypolycaena dubia* Aurivillius, 1895. Fig. Aurivillius in Seitz, 1922.
- Hypolycaena erylus* Trimen, see *philippus*.
- \**Hypolycaena hatita hatita* Hewitson, 1865.
- \**Hypolycaena hatita japhusa* Riley, 1921, *Trans. ent. Soc. Lond.* **1921** : 246, fig.
- \**Hypolycaena hatita ugandae* Sharpe, 1904.
- \**Hypolycaena jacksoni* Bethune Baker, 1906. Fig. Joicey & Talbot, 1921.
- \**Hypolycaena kadiskos* H. H. Druce, 1890.
- \**Hypolycaena lebona lebona* Hewitson, 1865.  
*Hypolycaena lebona* ab. *anomale* Dufrane, 1953, *Bull. Annl's R. Soc. ent. Belg.* **89** : 52.  
*Hypolycaena lebona* ab. *splendens* Dufrane, 1953, l.c. : 52.
- \**Hypolycaena lebona caerulea* Aurivillius, 1895.
- \**Hypolycaena lebona scintillans* Aurivillius, 1895.
- \**Hypolycaena liara liara* H. H. Druce, 1890. Fig. Aurivillius in Seitz, 1922.  
*naara* Karsch, 1893 (*nec* Hewitson, 1873) ; *symmacha* Hulstaert, 1924.
- \**Hypolycaena liara obscura* Stempffer, 1947, *Bull. Soc. ent. Fr.* **52** : 37.  
*Hypolycaena liara plana* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 116, figs.
- \**Hypolycaena naara* Hewitson, 1873. Fig. Aurivillius in Seitz, 1922.  
*Hypolycaena naara* (Karsch) (*nec* Hewitson, 1873), see *liara*.
- \**Hypolycaena nigra* Bethune Baker, 1913. Fig. Aurivillius in Seitz, 1922.
- \**Hypolycaena ogadenensis* Stempffer, 1946, *Revue fr. ent.* **13** : 10, fig.  
*Hypolycaena orejus* (Hopffer), see *philippus*.
- \**Hypolycaena pachalica* Butler, 1888.  
*aureolineata* Bethune Baker, 1906.
- \**Hypolycaena philippus philippus* (Fabricius), 1793. Fig. Hewitson, 1865.  
*orejus* (Hopffer), 1855 ; *erylus* (Trimen), 1866.
- \**Hypolycaena philippus ramonza* (Saalmuller) 1878.  
*Hypolycaena philippus ramonza* ab. *vittigera* Mabile, 1879.  
*Hypolycaena schubotzi* Aurivillius, 1923, *Ergebn. 2te D. Zent. Exp.* 1910-11, **1** : 1213.
- Hypolycaena seamani* Trimen, see *buxtoni*.
- Hypolycaena sebasta* Hulstaert, see *auricostalis*.
- Hypolycaena similis* Dufrane, 1945, *Bull. Annl's Soc. R. ent. Belg.* **81** : 118.
- Hypolycaena symmacha* Hulstaert, see *liara*.



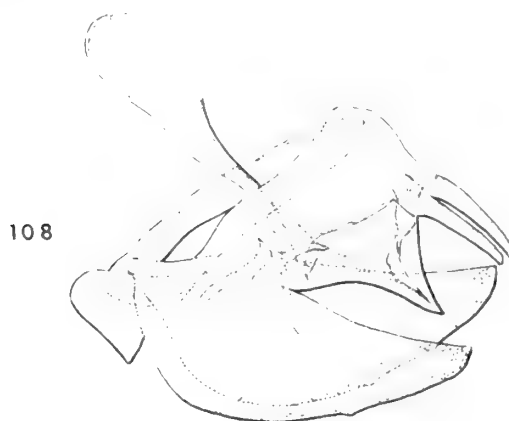
Genus *DAPIDODIGMA* Karsch

*Dapidodigma* Karsch, 1895, *Ent. Nachr.* **21** : 310 ; Aurivillius, 1898 : 318 ; 1923 : 389. Type-species : *Papilio hymen* Fabricius, 1775 (*Papilio liger* Cramer, 1782) by original designation.

Eyes smooth ; vertex of head clothed with erect hairs ; palpi protruding well beyond the frons, second segment very long, laterally compressed and clothed with short hairs, third segment reduced, acuminate ; antennae, which are a little less than half the length of the costa, with short segments gradually getting stouter and ending in a poorly differentiated cylindrical club ; ♂ fore tarsus unsegmented and clothed with very long hairs almost up to its extremity.

*Wing shape.* Hind wing oval, produced at the anal angle, outer margin angled at the end of vein 4, concave between veins 4 and 3, and with three delicate tails, all about equal in length, at the ends of veins 3, 2 and 1b, a small anal lobe. Male secondary sexual character, a large very pale sulphur-yellow androconial patch covering the whole cell and the bases of the interspaces 2 to 5.

*Wing venation* (Text-fig. 288).



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109

FIGS 108-109. *Dapidodigma hymen* (Fabricius), ♂ genitalia.

*Male genitalia* (Text-fig. 108, lateral view ; Text-fig. 109, ventral view). Uncus composed of two long digitate processes with rounded apices ; no subunci ; tegumen deeply notched on its posterior margin ; vinculum fairly broad ; valves oblong, the upper edges almost straight, the lower ones convex ; lower fultura composed of two small divergent arms fused basally to the base of the valves ; in addition, there is an offshoot, which I consider an upper fultura, articulated at about half-way along the upper edge of the valves, where it is slightly notched, connected with the edge of the tegumen and entirely surrounding the penis ; penis very elongate, swollen at the base, the external portion tapering regularly and slightly curving ; there are a few fine, short hairs on the uncus ; the valves are densely hairy, especially on the lower edges and apices.

The male genitalia of *D. demeter* Clench are identical with those of *D. hymen*.

#### LIST OF SPECIES OF *Dapidodigma*

- \**Dapidodigma demeter demeter* Clench, 1961, *Ann. Carneg. Mus.* **36** : 64, figs.  
*Dapidodigma demeter nuptus* Clench, 1961, l.c. : 65, fig.  
 \**Dapidodigma hymen* (Fabricius), 1715. Fig. Cramer, 1779, (as *liger*).

#### Genus *IOLAUS* Hübner

When I undertook the revision of the "*Iolaus* complex", in collaboration with Neville Bennett, I found myself faced with considerable difficulties. The group is so remarkably uniform in external appearance that its species are recognisable at a glance ; the upperside is nearly always blue, the underside pure white with a pattern of markings reduced to delicate postdiscal and antemarginal lines, and the hind wing carries delicate tails at the ends of veins 2 and 1b. But in respect of venation and male genitalia this uniformity is entirely lacking.

The genera hitherto widely employed within the *Iolaus* group have been based in the main on the venation, and can be grouped as follows :—

- A. Fore wing with 10 veins in both sexes :—  
*Hemiolaus, Stugeta, Pseudiolaus.*
- B. Fore wing with 11 veins in both sexes :—  
*Tanuetheira, Aphniolaus, Iolaus* (sensu stricto), *Epamera, Sukidion.*
- C. Fore wing with 12 veins in the male, 11 in female :—  
*Trichiolaus, Argiolaus.*

Some of these genera seem to me to have been founded on characters of secondary importance, for example, *Trichiolaus* on the hairiness of the eyes, *Tanuetheira* on the great length of the tail, *Aphniolaus* on its yellow coloration ; and it is impossible on any sound criterion to separate *Iolaus* (sensu stricto) from *Epamera*.

However, examination of the morphology of the male genitalia demonstrates that the great majority of species forming the *Iolaus* group have an armature of Thecline type, that is to say, with the dorsal elements forming a kind of hood with well developed subunci. Yet some others (e.g. *Argiolaus*) display a very different structure : in the *silas* group, the uncus is divided into two long sharp points, the subunci are rudimentary and the tegumen reduced ; *parasilanus* has a pseudotergum

quite distinct from the tegumen ; and in *catori* the very large dorsal elements are distally serrate and devoid of subunci.

Had we based our classification solely on the male genitalia, it would have been possible to devise genera wholly homogeneous in respect of this character, yet decidedly heterogeneous in respect of the characters of the venation and external features. We therefore adopted a system which is pragmatic rather than strictly logical, by retaining the genus *Iolaus* as a kind of "super-genus", by erecting subgenera for the species having genitalia profoundly different from the main bulk of the species, and by retaining the generic names hitherto in use, but treating them as subgenera. In this way it has resulted that within each subgenus there is both uniformity of venation and uniformity of genitalia. These characters are indicated in each of the subgenera adopted.

**IOLAUS (HEMIOLAUS) Aurivillius**

*Hemiolaus* Aurivillius, 1923 : 386 ; Pinhey, 1949 : 102. Type-species : *Iolaus caeculus*

Hopffer, 1855, designated by Stempffer & Bennett, 1958 : 1254.

*Hypolycaena* Felder (partim) ; Aurivillius, 1898 : 316 ; Murray, 1935 : 69 ; Swanepoel, 1953 : 180.

Eyes smooth ; frons reddish with two white side stripes and a dark depressed median line ; palpi reaching well beyond the frons, third segment slender, acuminate ; antennae thin,  $\frac{4}{7}$ th length of costa, each segment much longer than wide ; club gently swollen ; legs as in *Hypolycaena*, ♂ fore leg unsegmented.

*Wing shape.* Fore wing inner margin of ♂ with a large lobe near the base ; hind wing outer margin excised between the ends of veins 3 and 4, a delicate tail at the end of vein 2 and a much longer one at the end of 1b, a small lobe at the anal angle. Male secondary sexual characters : on the upperside of the hind wing a gleaming bronze patch covers the base of the wing and the greater part of the cell, the upper part of this patch being covered by the lobe of the fore wing ; between the lower edge of the cell and the basal part of vein 1b there is a tuft of long adpressed hairs facing towards the costa, and this is also partially covered by the lobe of the fore wing ; on the underside of the fore wing, along the inner margin, a nacreous zone, but no hair-tuft.

*Wing venation* (Text-fig. 289). Fore wing with only 10 veins.

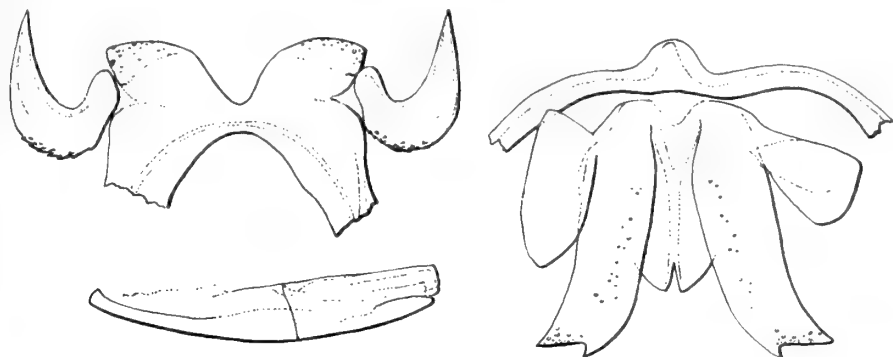


FIG. 110. *Iolaus (Hemiolaus) caeculus caeculus* Hopffer, ♂ genitalia.

*Male genitalia* (Text-fig. 110). Uncus composed of two suboval lobes slightly angled apically and separated by the deep depression of the posterior edge of the tegumen ; subunci curved, very stout in the middle, the lower edge bearing short spines in its basal third ; tegumen large, hood-shaped ; vinculum narrow dorsally and having a weak saccus ; lower fulcrum strongly developed and with two wide flattened arms which are almost wholly fused together ; valves composed of two lobes, the upper one oval, semi-membranous and, on this account, often distorted when the genitalia are mounted for the microscope, the lower process shaped as an elongate rectangle with the apex excised ; penis elongate, widely open dorsally, distally club-shaped ; uncus and apices of valves pilose.

The male genitalia of the other species of *Hemiolaus* are very similar to those of *caeculus*. The shape of the subunci furnishes good specific characters.

#### LIST OF SPECIES OF *Iolaus* (*Hemiolaus*)

- Iolaus* (*Hemiolaus*) *ceres*** (Hewitson), 1865. Fig. genitalia, Stempffer & Bennett, 1958.  
*maryra mabillei* Aurivillius, 1923.
- Iolaus* (*Hemiolaus*) *cobaltina*** (Aurivillius), 1898. Fig. Aurivillius in Seitz, 1923 ; fig. genitalia, Stempffer, 1958.  
*coeculus* (Mabille), *nec* Hopffer, 1855.
- Iolaus* (*Hemiolaus*) *coeculus coeculus*** Hopffer, 1855. Fig. Hopffer, 1862 ; fig. genitalia, Stempffer, 1938, *Mission Omo* 4 : 184.
- Iolaus* (*Hemiolaus*) *coeculus* f. *dolores*** (Suffert), 1904. Fig. Aurivillius in Seitz, 1923.
- Iolaus* (*Hemiolaus*) *coeculus* f. *obscurus*** (Suffert), 1904.
- Iolaus* (*Hemiolaus*) *coeculus* ab. *duponti*** Dufrane, 1953, *Bull. Anns Soc. R. ent. Belg.* 89 : 53.
- Iolaus* (*Hemiolaus*) *coeculus littoralis*** Stempffer, 1953, *Anns Mus. R. Congo belge* 27 : 25.
- Iolaus* (*Hemiolaus*) *coeculus*** (Mabille), *nec* Hopffer, see *cobaltina*.
- Iolaus* (*Hemiolaus*) *margites*** (Mabille), 1899.
- Iolaus* (*Hemiolaus*) *maryra maryra*** (Mabille), 1855. Fig. genitalia, Stempffer & Bennett, 1958.
- Iolaus* (*Hemiolaus*) *maryra mabillei*** Aurivillius, see *ceres*.
- Iolaus* (*Hemiolaus*) *varnieri*** (Stempffer), 1943, *Ann. Soc. ent. Fr.* 1942 : 118. Figs. Stempffer & Bennett, 1958.

#### ***IOLAUS* (*STUGETA*) H. H. Druce**

*Stugeta* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) 8 : 149 ; Aurivillius, 1898 : 317 ; 1923 : 387 ; Murray, 1935 : 71 ; Pinhey, 1949 : 102 ; Swanepoel, 1953 : 179. Type-species : *Iolaus bowkeri* Trimen, by original designation.

*Eyes* smooth ; palpi protruding far beyond the frons, second segment long, clothed with adpressed scales, third segment much shorter, slender, cylindrical, acuminate ; antennae robust, each segment almost as broad as long, club gradually swollen, cylindrical, not well differentiated ; legs long and slender, ♂ fore leg with femur hairy, tibia shorter than femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Hind wing oval, somewhat produced at the anal angle, outer margin slightly undulating between the ends of veins 6 to 3, a delicate tail at the end of vein 2, a much longer one at the end of vein 1b, a small lobe at the anal angle. Abdominal margin excised between the lobe and the end of vein 1a. No secondary male sexual characters.

*Wing venation* (Text-fig. 290). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 111). Uncus composed of two subtriangular lobes with rounded apices; subunci long, evenly curved, tapering gradually to a blunt apex; tegumen large only slightly notched on its posterior margin; vinculum broad above, narrower below; lower fultura articulated to the base of the valves and composed of two curved arms connected at their apices by a membrane, thus forming a complete ring around the penis; valves sub-rectangular, widened at the apices and bearing on their distal edge two stout teeth of unequal length; penis elongate, curved, the basal portion widely open, the external portion tapering regularly to a blunt apex; vesica with two long, sharp-pointed spines; uncus and distal portion of the valves hairy.

*Stugeta bowkeri* is remarkable in that some of its geographical races show sharp differences in the terminal contour of the valves (see Stempffer & Bennett, 1958, 20 : 1266, figs 14, 15). The male genitalia of the other species of the subgenus are very close to those of *bowkeri*.

The early stages of *S. bowkeri* have been described by Murray (1935 : 72) and Pinhey (1949 : 103); those of *S. marmorea olalae* by Jackson (1937, *Trans. R. ent. Soc. Lond.* 86 : 213).

LIST OF SPECIES OF *Iolaus* (*Stugeta*)

- \**Iolaus* (*Stugeta*) *bowkeri bowkeri* Trimen, 1864. Fig. Trimen, 1866.
- \**Iolaus* (*Stugeta*) *bowkeri* f. *caerulea* Stempffer, 1947, *Bull. Soc. ent. Fr.* 52 : 37.
- \**Iolaus* (*Stugeta*) *bowkeri ethiopica* Stempffer & Bennett, 1958 : 1266.

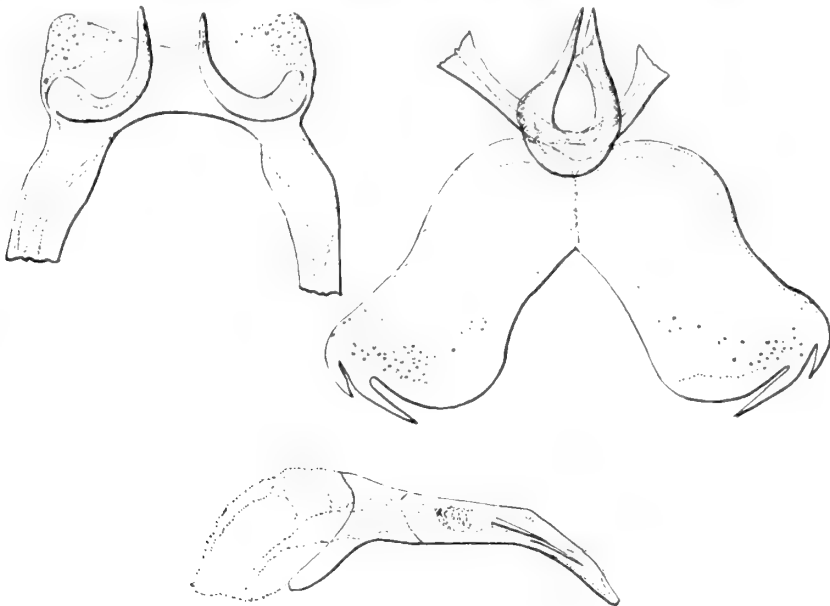


FIG. III. *Iolaus* (*Stugeta*) *bowkeri bowkeri* Trimen, ♂ genitalia.

- \**Iolaus (Stugeta) bowkeri kedonga* van Someren, 1939, *Jl E. Africa Uganda nat. hist. Soc.* **14** : 175, figs.
- \**Iolaus (Stugeta) bowkeri maria* Suffert, 1904. Fig. H. H. Druce, 1907 ; fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Stugeta) bowkeri mombase* Butler, 1901.
- \**Iolaus (Stugeta) bowkeri nyanzana* Wichgraff, 1911.
- \**Iolaus (Stugeta) bowkeri nyasana* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 116, fig.
- \**Iolaus (Stugeta) bowkeri occidentalis* Stempffer & Bennett, 1958 : 1268.
- \**Iolaus (Stugeta) bowkeri subinfusata* Grünberg, 1910.
- \**Iolaus (Stugeta) carpenteri* Stempffer, 1946, *Revue fr. Ent.* **13** : 11. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Stugeta) marmorea marmorea* (Butler), 1866. Fig. Aurivillius in Seitz, 1923 ; fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Stugeta) marmorea olalae* Stoneham, 1933, *Bull. Stoneham Mus.* **17** : 2.
- \**Iolaus (Stugeta) mimetica* Aurivillius, 1916. Fig. Stempffer & Bennett, 1958.
- \**Iolaus (Stugeta) somalina* Stempffer, 1946, *Revue fr. Ent.* **13** : 13, fig. (♀) ; 1954, *Bull. Soc. ent. Fr.* **59** : 109, fig. (♂) and fig. genitalia.

### *IOLAUS (PSEUDIOLAUS)* Riley

*Pseudiolaus* Riley, 1928, *Novit. zool.* **34** : 392 ; Swanepoel, 1953 : 179. Type-species : *Pseudiolaus poultoni* Riley, by original designation.

Eyes naked ; palpi protruding well beyond the frons, second segment rather slender, clothed with adpressed scales, third segment one-third the length of the second, subcylindrical, apex blunt ; antennae three-sevenths the length of the costa, club gradually swollen and one-third the total length of the antenna ; legs unicolorous white, ♂ fore tarsus unsegmented.

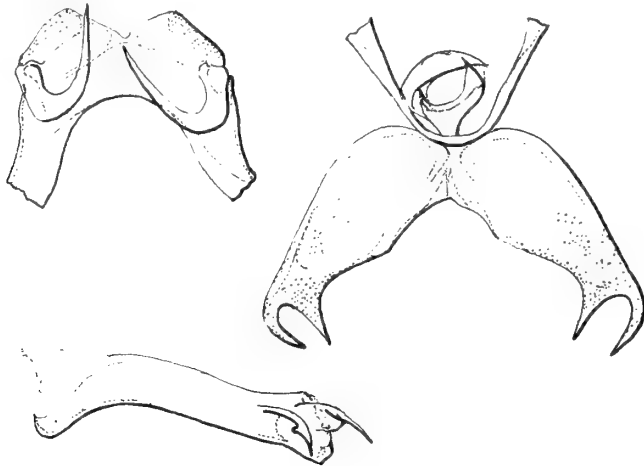


FIG. 112. *Iolaus (Pseudiolaus) poultoni* Riley, ♂ genitalia.

*Wing shape.* Fore wing inner margin with a large basal lobe ; hind wing outer margin with a marked angle at the end of vein 3, two delicate tails 4-5 mm. long, at the ends of veins 2 and 1b, a small anal lobe. Male secondary sexual characters : on the upperside of the hind wing there is an androconial patch, about 3 mm. wide, at the origin of vein 7, surrounded by a white pearly zone which extends into the cell ; on the underside of the fore wing, level with the lobe of the inner margin, there is a tuft of long hairs directed towards the androconial patch on the hind wing.

*Wing venation* (Text-fig. 291). Fore wing has only 10 veins.

*Male genitalia* (Text-fig. 112). Uncus composed of two lateral strips separated by the depression of the margin of the tegumen ; subunci strongly curved, very robust at the base and then tapering uniformly ; tegumen large and hood-shaped ; vinculum rather broad above, narrow below ; lower fultura pedunculate and bearing a complete ring which encircles the penis ; valves oblong, apex divided into two sharp-pointed teeth ; penis elongate, robust, slightly curved ; vesica enclosing two strong recurved spines ; uncus and distal portion of valves densely hairy.

The male genitalia of *lulua* are very similar to those of *poultoni*.

The subgenus *Pseudiolaus* is easily distinguished from the subgenus *Stugeta* by the more slender antennae, and in the male by the presence of secondary sexual characters ; the general appearance and wing markings of *Pseudiolaus* remind one of the subgenus *Epamera*.

#### LIST OF SPECIES OF *Iolaus* (*Pseudiolaus*)

\**Iolaus* (*Pseudiolaus*) *lulua* Riley, 1944, *Entomologist* **77** : 28. Fig. genitalia, Stempffer & Bennett, 1958.

\**Iolaus* (*Pseudiolaus*) *poultoni* Riley, 1928, *Novit. zool.* **34** : 392, figs (♂). Fig. ♀, Talbot, 1935, *Entomologist's mon. Mag.* **71** : 117.

#### *IOLAUS* (*TRICHIOLAUS*) Aurivillius

*Trichiolaus* Aurivillius, 1898 : 317 ; 1923 : 389. Type-species : *Hypolycaena mermeros* Mabilie, designated by Stempffer & Bennett, 1958 : 1276.

*Eyes* densely hairy ; palpi extending considerably beyond the frons, second segment very long and clothed with adpressed scales, third segment very short, conical ; antennae with a gradually swollen, fusiform club ; thorax clothed below with grey silky hairs ; ♂ fore leg, femur clothed with long grey hairs, tibia as long as the femur, tarsus unsegmented, robust, finely spinose below.

*Wing shape.* Hind wing oval, somewhat produced at the anal angle, outer margin slightly angular at the end of vein 4, a short pointed tail at the end of vein 3, a longer delicate tail at the end of vein 2, a still longer tail at the end of vein 1b, a lobe at the anal angle. Male secondary sexual characters absent.

*Wing venation* (Text-fig. 292, ♂). Fore wing, ♂ with 12 veins, ♀ 11.

*Male genitalia* (Text-fig. 113). Uncus composed of two large semicircular lobes ; subunci long and curving ; tegumen rather large, but narrow in the median area ; vinculum broad dorsally, narrow ventrally ; inferior fultura like a furca with divergent arms ; valves oblong with rounded apices ; penis elongate, widely open on the upper surface of almost the whole of the internal portion, the external portion very short with bulbous apex ; vesica appearing shagreened ; lobes of uncus and distal portion of valves hairy.

The male genitalia of *I. (Trichiolaus) argentarius* are almost the same as those of *I. (Trichiolaus) mermeros*, only the valves are a little narrower.

LIST OF SPECIES OF *Iolaus* (*Trichiolaus*)

\**Iolaus* (*Trichiolaus*) *argentarius* Butler, 1879. Fig. Oberthur, 1916 (as *leucoceros*).

*leucoceros* (Oberthur), 1916.

*Iolaus* (*Trichiolaus*) *leucoceros* (Oberthur), see *argentarius*.

\**Iolaus* (*Trichiolaus*) *mermeros* (Mabille), 1878. Fig. Mabille, 1887.

***IOLAUS* (*TANUETHEIRA*) H. H. Druce**

*Tanuetheira* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) **8** : 148. Type-species : *Papilio timon* Fabricius, by original designation.

*Iolaus* Hübner (partim) ; Aurivillius, 1898 : 322 ; 1923 : 391.

*Eyes* smooth ; palpi extending well beyond the frons, second segment long, laterally compressed, clothed below with white adpressed scales and above with black scales, third segment rather short and similarly clothed with white and black scales ; antennae about half as long as the costa, with a gradually swollen fusiform club which has a reddish apex ; thorax clothed below with long white hairs ; all tarsi black and white-annulated, ♂ fore tarsus unsegmented.

*Wing shape.* Fore wing inner margin with slight lobe near the base ; hind wing outer margin slightly angular at the end of vein 4, a short triangular tail at the end of vein 3, a long delicate tail at the end of vein 2, a broad tail about 2 mm. wide and 18–20 mm. long at the end of vein 1b, a small lobe at the anal angle. Male secondary sexual characters : on the underside of the fore wing, in the middle of the inner margin, there is a tuft of long black hairs ; on the upperside of the hind wing there is a scaly patch at the base of vein 7, surrounded by a wide, glossy, satin-like area which covers a large part of the cell and costal area.

*Wing venation* (Text-fig. 293). Fore wing with 11 veins in both sexes. H. H. Druce was in error, as Aurivillius noted, in attributing 12 veins to the ♂.

*Male genitalia* (Text-fig. 114). Uncus composed of two lobes with rounded apices separated by the shallow depression of the margin of the tegumen ; subunci curved, fairly long with thickened base ; tegumen large, subrectangular, in its normal position hood-shaped ; vinculum rather broad with a very indistinct saccus ; lower fultura shield-shaped, fused to the base of the valves, which are oblong with the apex slightly recurved and a serrated lower edge ; penis

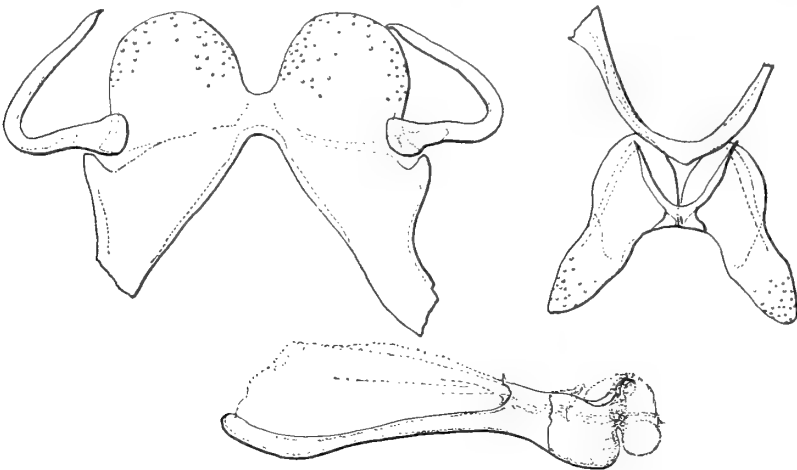


FIG. 113. *Iolaus* (*Trichiolaus*) *mermeros* (Mabille), ♂ genitalia.



long, very robust, slightly swollen at the base with a cylindrical external portion ; vesica enclosing two enormous lanceolate spines ; uncus lobes clothed with long, fine hairs, apex and lower edge of valvae pilose.

The caterpillar of *T. timon* has been described by Farquharson (1922, *Trans. ent. Soc. Lond.* 1922 : 361). It lives on the flowers of *Loranthus incanus* Schumacher (Loranthaceae), a parasite of *Funtumia elastica* (Preuss) Stapf (Apocynaceae).

LIST OF SPECIES OF *Iolaus* (*Tanuetheira*)

- \**Iolaus* (*Tanuetheira*) *timon timon* (Fabricius), 1787. Fig. Butler, 1870.
- \**Iolaus* (*Tanuetheira*) *timon prometheus* H. H. Druce, 1891. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus* (*Tanuetheira*) *timon congoensis* Joicey & Talbot, 1921, *Bull. Hill Mus. Willey* 1 : 90, fig. Fig. genitalia, Stempffer & Bennett, 1958.
- Iolaus* (*Tanuetheira*) *timon orientius* Hulstaert, 1924, *Rev. zool. afr.* 12 : 126. Fig. genitalia, Stempffer & Bennett, 1958.

***IOLAUS* (*ARGIOLAUS*) H. H. Druce**

*Argiolaus* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) 8 : 143 ; Pinhey, 1949 : 103. Type-species : *Iolaus silas* Westwood, 1852, by original designation.

*Iolaus* Hübner (partim) ; Aurivillius, 1898 : 324 ; 1923 : 396 ; Murray, 1935 : 74 ; Swanepoel, 1953 : 173.

Eyes smooth ; palpi long, parallel, second segment long, slightly ascending, laterally compressed, clothed below with closely packed white scales, third segment short, porrect, with blunt tip ; antennae a little longer than half the costa, rather robust, the club cylindrical, not well defined ; tibia of ♂ fore leg shorter than femur, tarsus unsegmented and bearing delicate spines below.

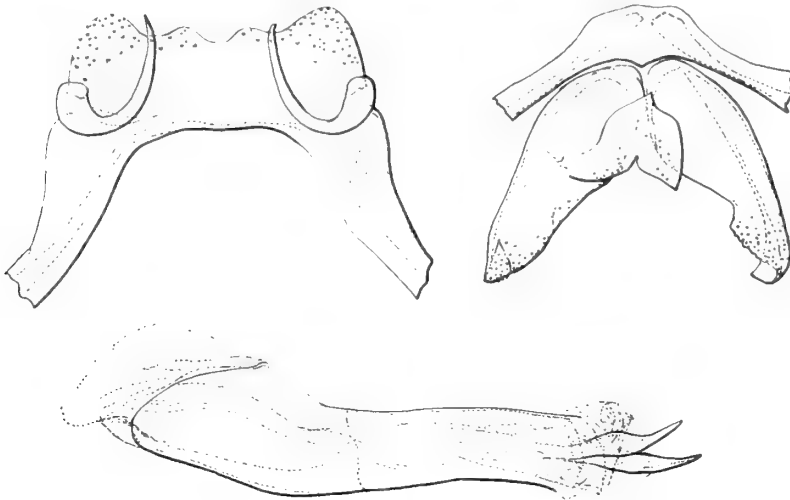


FIG. 114. *Iolaus* (*Tanuetheira*) *timon orientius* Hulstaert, ♂ genitalia.

*Wing shape.* ♂ fore wing inner margin feebly lobed basally : hind wing hind margin with a sharp tooth at end of vein 3, a long and delicate tail at vein 2, and a delicate and much longer tail at 1b ; anal angle lobed. Male secondary sexual characters : midway on the inner margin of the fore wing below there is a tuft of yellowish hair directed towards vein 2 ; on the upper-side of the hind wing, between vein 7 and the upper edge of the cell, a greyish oval patch covered with large oval erect scales and surrounded by a wide bronze shining area that fills the cell and is covered with smaller scales.

*Wing venation* (Text-fig. 294). The ♂ fore wing with 12 veins, ♀ with 11, vein 8 being absent.

*Male genitalia* (Text-fig. 115). Uncus composed of two long sharp, slightly curved points, separate almost to the base ; subunci rudimentary, subtriangular and scarcely visible ; tegumen reduced ; vinculum broad, bearing on each side two large, triangular, weakly sclerotized expansions ; in their natural position these expansions are joined to the lower fultura by a membrane ; in *silas* the vinculum ends in a large triangular saccus, which is lacking in the other two species of the sub-genus. Fultura inferior composed of a ring born on a peduncle and surrounding the penis ; valves oblong ; penis short, massive, widely open above basally ; vesica enclosing stout cunei ; uncus pilose, upper margin of valves only slightly so.

Among the many species placed in *Argiolaus* by Druce and other authors, only two, *lalos* and *crawshayi* have male genitalia of the *silas* type. In the others they are so different that it has been necessary to arrange them in new subgenera. The area of distribution of *Argiolaus* even in this restricted sense is very extensive, comprising the whole of East and South Africa from Abyssinia to the Cape, and the species break up into more or less sharply defined geographical races, each of which differs within the species not only in external appearance but also in the form of the valves, which show constant modifications.

The early stages of *silas* and *crawshayi* have been described by Murray (1935 : 75), Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 214) and Pinhey (1949 : 104). The caterpillars live on the flowers of various kinds of *Loranthus* which are parasitic on trees inhabited by ants of the genus *Crematogaster*.

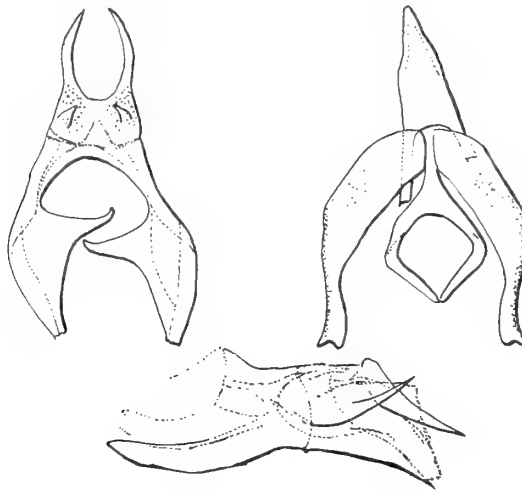


FIG. 115. *Iolus (Argiolaus) silas silas* Westwood, ♂ genitalia.

LIST OF SPECIES OF *Iolaus* (*Argiolaus*)

- \**Iolaus* (*Argiolaus*) *crawshayi crawshayi* Butler, 1900. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus* (*Argiolaus*) *crawshayi elgonae* Stempffer & Bennett, 1958 : 1291, fig.
- \**Iolaus* (*Argiolaus*) *crawshayi littoralis* Stempffer & Bennett, 1958 : 1295, fig.
- \**Iolaus* (*Argiolaus*) *crawshayi maureli* Dufrane, 1954, *Bull. Anns Soc. R. ent. Belg.* 90 : 282. Fig. Stempffer & Bennett, 1958 : 49.
- \**Iolaus* (*Argiolaus*) *crawshayi nyanzae* Stempffer & Bennett, 1958 : 1291, fig.
- \**Iolaus* (*Argiolaus*) *crawshayi niloticus* Stempffer & Bennett, 1958 : 1293, figs.
- \**Iolaus* (*Argiolaus*) *lalos lalos* H. H. Druce, 1896. Fig. H. H. Druce, 1902 ; fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus* (*Argiolaus*) *lalos kigezi* Stempffer & Bennett, 1958 : 1287, figs.
- \**Iolaus* (*Argiolaus*) *silas silas* Westwood, 1852.
- \**Iolaus* (*Argiolaus*) *silas* ab. *lasius* Suffert, see *silas silarus*.
- \**Iolaus* (*Argiolaus*) *silas silarus* H. H. Druce, 1885. Fig. genitalia, Stempffer & Bennett, 1958.
- silas* ab. *lasius* Suffert, 1904.

***IOLAUS* (*IOLAPHILUS*)** Stempffer & Bennett

*Iolaphilus* Stempffer & Bennett, 1958 : 1298. Type-species : *Iolaus menas* H. H. Druce, by original designation.

*Iolaus* Hübner (partim) ; Aurivillius, 1898 : 323 ; 1923 : 393 ; Murray, 1935 : 75 ; Swanepoel, 1953 : 172.



FIG. 116. *Iolaus* (*Iolaphilus*) *menas* Druce, ♂ genitalia.

Eyes, palpi, antennae and legs as in typical *Argiolaus*.

*Wing shape.* Fore wing inner margin more or less strongly lobed near the base, weakly in *menas*, *trimeni*, *maritimus*, *vansomereni*, *poecilaon*, *iturensis*, *aequatorialis*, *laonides* and *ismenias*, more sharply in *julus*, *aelianus*, *calisto* and *cottrelli*. Hind wing with a tooth at vein 3, a delicate tail at the end of vein 2, and a longer one at 1a which, in *caesareus*, is extremely long and spatulate at the tip; anal angle lobed. Male secondary sexual characters: as in *Argiolaus*, namely, a hair tuft midway along the inner margin on the underside of the fore wing, and an androconical patch, small to large, on the upperside of the hind wings near the base.

*Wing venation.* Exactly as in *Argiolaus*, fore wing with 12 veins in the ♂, 11 in the ♀.

*Male genitalia* (Text-fig. 116). Uncus composed of two subtriangular lobes separated by a slight depression of the margin of the tegumen; subunci short, stout, gently curved. Tegumen subrectangular, hood-shaped; vinculum broad; lower fultura formed of two large laminae, broader at their extremities and with their basal halves fused together; valves long, narrow, curving, with rounded apices; penis very stout, more elongate than in *Argiolaus*, the inner part widely open dorsally, the outer part rather short; vesica enclosing two stout unequal spines: uncus and lower fultura pilose, valves almost naked.

The male genitalia of *menas* are evidently of the ordinary Thecline type, profoundly different from typical *Argiolaus*. The armatures of the other *Iolaphilus* are certainly not all identical with those of *menas* either, but the general plan is the same. The following differences can be indicated:—

a. Subunci weakly curved: *menas*, *henryi*, *trimeni*, *schultzei*, *julus*, *aelianus*, *iturensis*, *maritimus*, *alcibiades*, *paneperata*, *lukabas*, *ndolae*, *ismenias*, *vansomereni* and *aequatorialis*.

b. Subunci very bent: *gabunica*, *caesareus*, *calisto*, *laonides* and *poecilaon*.

c. Lower fultura composed of large laminae: *menas*, *henryi*, *trimeni*, *schultzei*, *julus*, *aelianus* and *gabunica*.

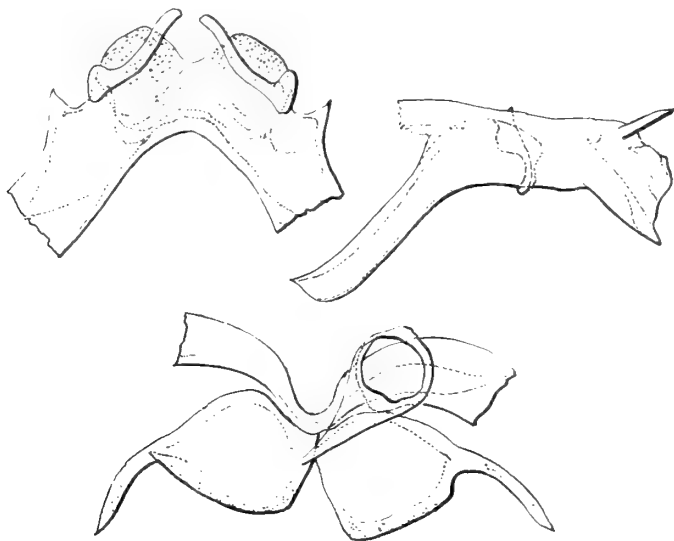


FIG. 117. *Iolous (Iolaphilus) alcibiades* Kirby, ♂ genitalia.

d. Lower fultura in the form of a ring enclosing the penis and arising from a peduncle : *iturensis*, *maritimus*, *alcibiades*, *paneperata*, *lukabas*, *ndolae*, *caesareus*, *ismenias*, *vansomereni* and *aequatorialis*.

e. Lower fultura in the form of a furca with delicate divergent branches : *laonides* and *poecilaon*.

f. Uncus bearing horn-like expansions : in *bergeri* the uncus bears four sharp-pointed processes, the outer pair triangular, the inner pair digitate ; subunci slender, gently curved ; tegumen reduced ; vinculum narrow ; lower fultura large and crescentic ; valves oblong ; penis long and slender, strongly curved ; uncus, lower margin and apex of valves lightly pilose. In *cottrelli* the uncal expansions are much shorter and the penis is of the *Iolaphilus* type. In *kayonza* the uncus has two expansions only.

The male genitalia of all the known species of *Iolaphilus* having already been figured (1958, Stempffer & Bennett) only those of *alcibiades* (Text-fig. 117), *calisto* (Text-fig. 118), *laonides* (Text-fig. 119) and *bergeri* (Text-fig. 120) are reproduced here.

The early stages of *julus*, *alcibiades* and *paneperata* have been described by Farquharson (1922, *Trans. ent. Soc. Lond.* **1922** : 361) and Eltringham (l.c. : 479). Like those of *Argiolaus*, the larvae live on *Loranthus*.

LIST OF SPECIES OF *Iolaus* (*Iolaphilus*)

\**Iolaus* (*Iolaphilus*) *aelianus aelianus* Staudinger, 1891 (July) (♀). Fig. genitalia, Stempffer & Bennett, 1958.

*jamesoni* H. H. Druce, 1891, August (♂).

\**Iolaus* (*Iolaphilus*) *aelianus entebbae* Riley, 1928, *Novit. zool.* **34** : 376, fig.

\**Iolaus* (*Iolaphilus*) *aequatorialis* Stempffer & Bennett, 1958 : 1322, figs.

\**Iolaus* (*Iolaphilus*) *alcibiades*, Kirby, 1871. Fig. Aurivillius in Seitz, 1923.

*julianus* Staudinger, 1891.

*Iolaus* (*Iolaphilus*) *anesius* Hulstaert, see *trimeni*.



FIG. 118. *Iolaus* (*Iolaphilus*) *calisto* (Doubleday & Hewitson), ♂ genitalia.

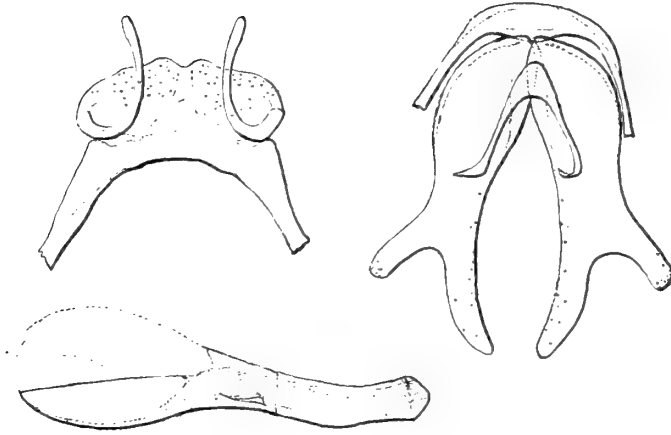


FIG. 119. *Iolus (Iolaphilus) laonides* Aurivillius, ♂ genitalia of type.

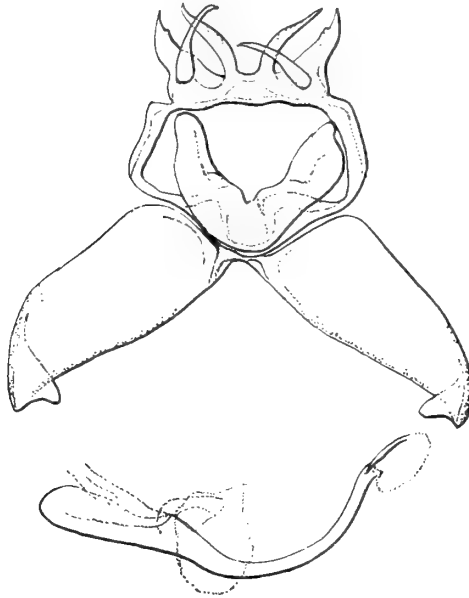


FIG. 120. *Iolus (Iolaphilus) bergeri* Stempffer, ♂ genitalia.

- \**Iolaus (Iolophilus) bergeri* Stempffer, 1953, *Annls Mus. R. Congo belge* **27** : 27, fig.
- \**Iolaus (Iolophilus) caesareus* Aurivillius, 1895. Fig. Aurivillius in Seitz, 1923 ; fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Iolophilus) calisto* (Doubleday & Hewitson), 1852.
- \**Iolaus (Iolophilus) cottrelli* Stempffer & Bennett, 1958 : 1330, figs.
- Iolaus (Iolophilus) elisa* Suffert, see *paneperata*.
- \**Iolaus (Iolophilus) gabunica* Riley, 1928, *Novit. zool.* **34** : 375 (♂), fig. Fig. genitalia, Stempffer & Bennett, 1958. Stempffer, 1961 : 93 fig. (♀).
- \**Iolaus (Iolophilus) henryi* Stempffer, 1961, l.c. : 88, figs.
- \**Iolaus (Iolophilus) ismenias ismenias* (Klug), 1834. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Iolophilus) ismenias piaggiae* Oberthur, 1883. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Iolophilus) iturensis* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 91 (♀). Figs Stempffer & Bennett, 1958 (♀ and ♂ genitalia).
- Iolaus (Iolophilus) jamesoni* H. H. Druce, see *aelianus*.
- Iolaus (Iolophilus) julianus* Staudinger, see *alcibiades*.
- Iolaus (Iolophilus) julius* Staudinger, see *lukabas*.
- \**Iolaus (Iolophilus) julus* Hewitson, 1869. Fig. genitalia, Stempffer & Bennett, 1958
- matilda* Suffert, 1904.
- \**Iolaus (Iolophilus) kayonza* Stempffer & Bennett, 1958 : 1333, figs.
- \**Iolaus (Iolophilus) laonides* Aurivillius, 1897. Fig. Aurivillius in Seitz, 1923.
- Iolaus (Iolophilus) lekanion* H. H. Druce, see *lukabas*.
- \**Iolaus (Iolophilus) lukabas* H. H. Druce, 1890. Fig. H. H. Druce, 1902 ; fig. genitalia, Stempffer & Bennett, 1958.
- lekanion* H. H. Druce, 1891 ; *julius* Staudinger, 1891.
- \**Iolaus (Iolophilus) maritimus maritimus* Stempffer & Bennett, 1958 : 1308, figs. (♂). Stempffer, 1961 : 91, fig. (♀).
- \**Iolaus (Iolophilus) maritimus usambara* Stempffer, 1961 : 91, figs.
- Iolaus (Iolophilus) matilda* Suffert, see *julus*.
- \**Iolaus (Iolophilus) menas* H. H. Druce, 1890. Fig. H. H. Druce, 1902.
- \**Iolaus (Iolophilus) ndolae* Stempffer & Bennett, 1958 : 1313, figs.
- Iolaus (Iolophilus) paneperata* H. H. Druce, 1890. Fig. H. H. Druce, 1902. Fig. genitalia, Stempffer & Bennett, 1958.
- elisa* Suffert, 1904.
- \**Iolaus (Iolophilus) poecilaon* Riley, 1928, *Novit. zool.* **34** : 379, fig. Fig. genitalia, Stempffer & Bennett, 1958, fig.
- \**Iolaus (Iolophilus) schultzei* Aurivillius, 1905. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Iolophilus) trimeni* Wallengren, 1875. Fig. Trimen, 1887 ; fig. genitalia, Stempffer & Bennett, 1958.
- anesius* Hulstaert, 1924.
- \**Iolaus (Iolophilus) vansomereni* Stempffer & Bennett, 1958 : 1319, figs.

**IOLAUS (PHILIOLAUS) Stempffer & Bennett**

*Philiolaus* Stempffer & Bennett, 1958 : 1336. Type-species : *Iolaus parasilanus* Rebel, 1914, by original designation.

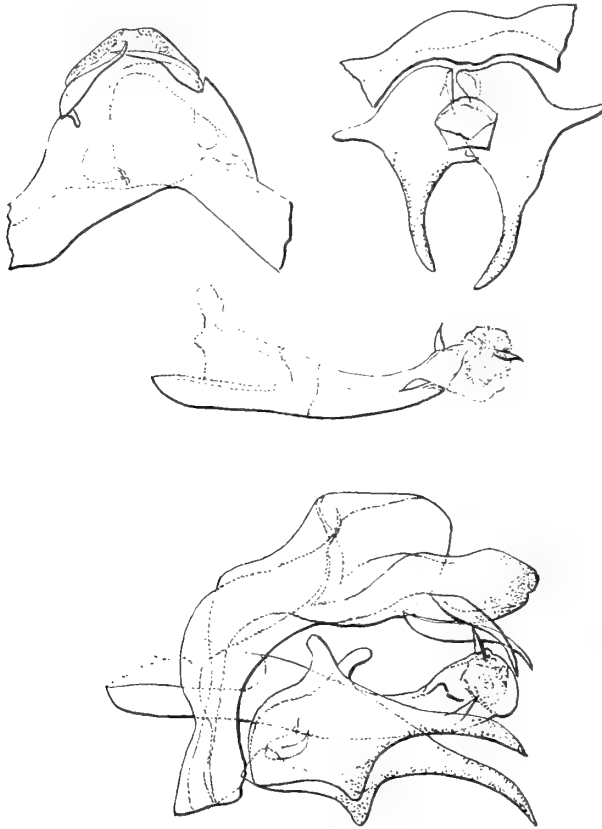
*Iolaus* Hübner (partim) ; Aurivillius, 1923 : 395.

Eyes, palpi, antennae and legs as in *Argiolaus* and *Iolaphilus*.

Wing shape. Fore wing in ♂ with inner margin weakly lobed ; hind wing as in *Argiolaus*. Male secondary sexual characters as in *Argiolaus* and *Iolaphilus*.

Venation identical with the same two subgenera.

Male genitalia (Text-fig. 121, lateral view, Text-fig. 122). Of such a specialized type as to warrant the erection of a subgenus ; uncus and tegumen almost completely separated from the pseudotergum, which forms above them a kind of hood, a disposition more easily seen in a lateral view, since the parts are superimposed when seen in postero-ventral aspect ; uncus reduced to two small ribbons separated by a weak median depression ; subunci almost straight, tapering to a sharp point ; tegumen very ample ; vinculum broad with a large pseudotergum ; lower futura very reduced ; valves roughly lozenge-shaped with a sharp digitate apex ; penis elongate, slightly curved ; vesica enclosing three short spines ; uncus and lower margin of valves pilose.



FIGS 121-122. *Iolaus (Philiolaus) parasilanus divaricatus* Riley, 121, ♂ genitalia ; 122, lateral view.



LIST OF SPECIES OF *Iolus* (*Philiolus*)

- Iolus* (*Philiolus*) *parasilanus parasilanus* Rebel, 1914. Fig. Riley, 1928, *Novit. zool.* 34.
- \**Iolus* (*Philiolus*) *parasilanus divaricatus* Riley, 1928, l.c. : 377, figs. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolus* (*Philiolus*) *parasilanus mabellei* Riley, 1928, l.c. : 378, figs. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolus* (*Philiolus*) *parasilanus maesseni* Stempffer & Bennett, 1958, fig. and fig. genitalia.

***IOLAUS* (*APHNIOLAUS*) H. H. Druce**

*Aphniolus* H. H. Druce, 1902, *Proc. zool. Soc. Lond.* 1902 : 117. Type-species : *Myrina pallene* Wallengren, by original designation.

*Iolus* Hübner (partim) ; Aurivillius, 1898 : 326 ; 1924 : 405 ; Murray, 1935 : 81 ; Swanepoel, 1953 : 178.

*Eyes* smooth ; frons clothed with yellowish white hairs ; palpi long, ascending, parallel, second segment long, clothed below with yellow adpressed scales, third segment long, cylindrical, acuminate, clothed with black scales ; antennae short, club cylindrical, not well differentiated ; thorax robust, clothed below with long silky hairs ; abdomen short ; ♂ fore leg with tibia slightly shorter than femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing inner margin straight without lobe ; hind wing produced at the anal angle, outer margin angular at the end of vein 3, a delicate tail at the end of vein 2 and a much longer one at the end of 1b, a lobe at the anal angle. No secondary ♂ sexual characters.

*Wing venation* (Text-fig. 295). Fore wing with 11 veins in both sexes ; hind wing, cell very short.

*Male genitalia* (Text-fig. 123). Uncus composed of two small triangular lobes separated by a slight depression of the margin of the tegumen ; subunci short, very robust, almost straight, shaped like two blades with rounded apices ; tegumen large, quadrangular, in their normal position uncus and tegumen together are hood-shaped ; vinculum broad with no saccus ; lower fultura strongly developed, Y-shaped, the two apices spatulate with a slightly serrated

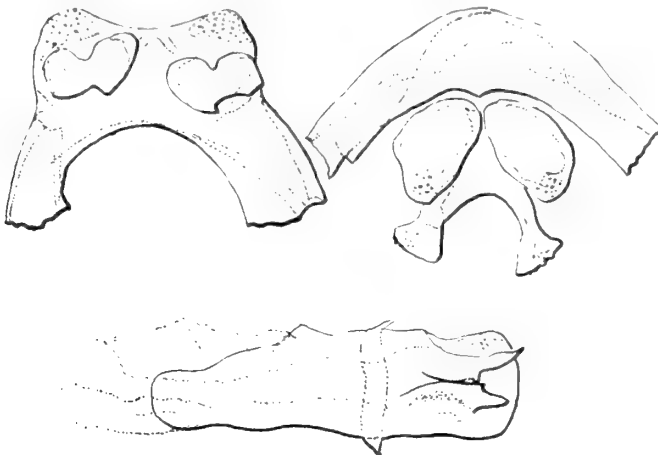


FIG. 123. *Iolus* (*Aphniolus*) *pallene* (Wallengren), ♂ genitalia.

distal edge ; valves oval, very small in comparison with the dorsal structures ; penis large, very robust ; vesica enclosing two large cunei ; uncus, and the apices of the lower fulcrum and of the valvae, pilose.

*Aphniolaus pallene* is very easily recognized by the pale sulphur-yellow colour of its wings, a colour not found in any other species of *Iolaus*.

#### LIST OF SPECIES OF *Iolaus* (*Aphniolaus*)

\**Iolaus* (*Aphniolaus*) *pallene* (Wallengren), 1857. Fig. Hewitson, 1878.

#### *IOLAUS* (*IOLAUS*) Hübner

*Iolaus* Hübner, 1823, *Verz. bek. Schmett.* : 81. Type-species : *Papilio eurisus* Cramer, designated by Hewitson, 1863, *Ill. diurn. Lep. Lycaenidae*, 1 : 40.

*Iolaus* Hübner (partim) ; Aurivillius, 1898 : 325 ; 1924 : 403.

*Eyes* smooth ; palpi long, slightly ascending, parallel, second segment long, slender, extending beyond the frons, third segment more slender, acuminate ; antennae about half the length of the costa, slender, with a poorly differentiated club ; thorax fairly robust, clothed below with silky hairs ; fore leg of the ♂ with tibia shorter than the femur and the tarsus unsegmented, finely spinose below, tibiae of mid and hind legs shorter than the femora, metatarsi long.

*Wing shape.* Fore wing in ♂ with inner margin slightly lobed basally ; hind wing, both sexes, outer margin angled at the end of vein 4, three delicate tails increasing in length at the ends of veins 3, 2 and 1b ; a lobe at the anal angle. Male secondary sexual characters : on the underside of the fore wing a shining, scaly patch below the lower edge of the cell ; in the middle of the inner margin a tuft of long, adpressed black hairs ; on the upperside of the hind wing a large black scaly area below the base of vein 8 and covering the upper half of the cell.

*Wing venation* (Text-fig. 296). Fore wing with 11 veins in both sexes ; hind wing, cell short, truncated.



FIG. 124. *Iolaus* (*Iolaus*) *eurisus* (Cramer), ♂ genitalia.

*Male genitalia* (Text-fig. 124). Uncus composed of two triangular lobes with rounded apices ; subunci long, obtuse angled, robust at the base and tapering gradually to the apex ; tegumen large ; in their normal position uncus and tegumen together are hood-shaped ; vinculum wide above, narrow below, no saccus ; lower fultura consists of a ring, which closely encircles the penis, and is borne on a long peduncle fused to the point of origin of the valves ; valves oblong, slightly falcate at the apices, the upper process bearing distally a lobe folded back on the valve ; penis long, robust, internally widely open dorsally, external portion tapering gradually to the apex ; vesica enclosing two large cunei, (exserted in the figure) ; uncus densely hairy, only a few hairs on the apices of the valves.

The genitalia of *bolissus* and *carina* only differ from those of *eurisus* in certain details of the shape of the valves.

LIST OF SPECIES OF *Iolaus* (*Iolaus*)

- \**Iolaus (Iolaus) bolissus bolissus* Hewitson, 1873 (♂). Fig. Hewitson, 1878. Fig. (♀) and fig. genitalia, Stempffer & Bennett, 1958.
- Iolaus (Iolaus) bolissus aurora* Clench, 1964, *Jl N.Y. ent. Soc.* **72** : 243.
- Iolaus (Iolaus) bolissus azureus* Clench, 1964, l.c. : 243.
- \**Iolaus (Iolaus) carina carina* Hewitson, 1873. Fig. Hewitson, 1878. Fig. genitalia, Stempffer & Bennett, 1958.
- \**Iolaus (Iolaus) carina gabonensis* Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 125 ; fig. op.c., 1952.
- \**Iolaus (Iolaus) eurisus* (Cramer), 1779.  
*helius* (Fabricius), 1781 ; *thurau*i Suffert, 1904.
- Iolaus (Iolaus) helius* (Fabricius), see *eurisus*.
- Iolaus (Iolaus) thurau*i Suffert, see *eurisus*.
- Iolaus (Iolaus) vexillarius* Clench, 1964, l.c. : 241, fig. genitalia.

**IOLAUS (EPAMERA) H. H. Druce**

*Epamera* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) **8** : 139. Type-species : *Iolaus sidus* Trimen, by original designation.

*Iolaus* Hübner (partim) ; Aurivillius, 1898 : 325, 326 ; 1923 : 394 ; 1924 : 397 ; Murray, 1935 : 76 ; Swanepoel, 1953 : 173.

In his description H. H. Druce gave the following generic characters : " Allied to *Iolaus*, smaller. Venation the same. Fore-wing below without the thick patch of scales above the tuft of hairs on the inner margin. Head broader, antennae shorter, stouter and less distinctly clavate ". However, with the exception of the venation, it is necessary to state that none of the other generic characters given is to be found in every one of the species generally placed in *Epamera*. In size the species of the *laon* group are at least as large as those of typical *Iolaus* ; but it is true that most of the species of *Epamera* are small. The length and the shape of the antennae seem to vary from species to species, though only slightly. In no case do they show any striking peculiarities. As in all species of the large genus *Iolaus* the fore tarsi of the ♂ are unsegmented.

*Wing shape.* This varies from species to species. In the ♂ fore wing the inner margin is hardly lobed at all in *sidus*, *mimosae*, *tajoraca*, *aphnaeoides*, *flavilinea*, *alienus*, *aemulus* and *penningtoni*; the lobe is more pronounced in the other species, especially in those of the *iasis* and *hemicyanus* groups. In most of the species the fore wings are roughly of the subtriangular shape, but in the *hemicyanus* group the inner margin is much shorter than the costal margin so that the wing becomes almond-shaped. The hind margin of the hind wings is slightly concave in *alienus*, *violacea* and *bakeri*; on the other hand in the other species it is angled or even tailed at the end of vein 3, this tail being moderately well developed in the *laon* group. There is a delicate tail at the end of vein 2, and another longer one at vein 1b which in *longicauda* is very long. Male secondary sexual characters: on the underside of the fore-wings there is a glossy area, between the lower edge of the cell and the inner margin, which is small or even absent in some species, e.g. *mimosae*, *aphnaeoides*, *alienus*, *aemulus* and *bellina*, but large and conspicuous in *sidus*, *iasis*, *cytaeis*, *laon*, *silanus*, *australis*, *creta* etc. A hair tuft on the inner margin is present in all species except *glaucus* and those of the *hemicyanus* group. On the upperside of the hind wing, in all the species of the subgenus, there is a more or less well developed glossy androconial patch at the base of the wing.

*Wing venation* (Text-fig. 297). Fore wing with 11 veins in both sexes.

*Male genitalia* (Text-fig. 125, *sidus*). Uncus composed of two small triangular lobes narrowly fused to the margin of the tegumen on either side of the median depression; subunci long, robust, massive basally, obtuse angled, blunt ended; tegumen strap-like, its posterior margin with a rounded depression; as in all *Iolaus*, the tegumen in its normal position is hood-shaped; vinculum rather broad, prolonged into a squat rounded saccus; lower fultura blade-shaped, its deeply indented apex encircling the penis; valves oblong-oval, the apex slightly serrate and folded towards the lower margin; penis large, inner portion widely open dorsally, apex obliquely truncate; uncus pilose, a few hairs on the distal half of the valves along the upper margin.

The male genitalia in *Epamera* are all of the "Thecline" type, that is to say, with a hood-like tegumen and well developed subunci, but they differ amongst themselves in structural details, for example: the lobes of the uncus more or less separated from one another, subunci more or less curved, outline of the valves more or less incised,

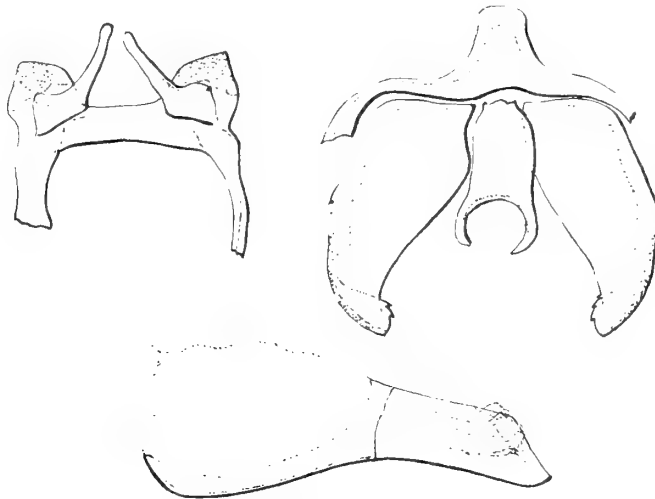


FIG. 125. *Iolaus (Epamera) sidus* Trimen, ♂ genitalia.

penis more or less massive. In accordance with these characters one can form "groups" of species, but they are not homogeneous, they are ill-defined and connected by transitions, so that one cannot accord them serious systematic value. In illustration of each of these groups, reviewed below, illustration of the male genitalia is restricted to a single species, since all the species are figured in the Revision of the genus *Epamera* (Stempffer, 1959, *Bull. Inst. fr. Afr. noire* **21** : 227-319).

Group A :—Tegumen with median notch; uncal lobes separated; subunci curved; valves rather large, not much incised; penis robust and usually enclosing large spines :—

*I. (E.) sidus, silanus, scintillans, australis, mimosae* (Text-fig. 126), *tajoraca, jacksoni, aphnaeoides, umbrosa, nursei, laon, farquharsoni, moyambina, stenogrammica, arborifera, dubiosa, penningtoni*.

Group B :—Tegumen without median notch, lobes of uncus confluent, subunci short, weakly curved, valves not much incised, penis short and massive :—

*I. (E.) pollux* (Text-fig. 127), *coelestis, neavei, flavilinea, longicauda*.

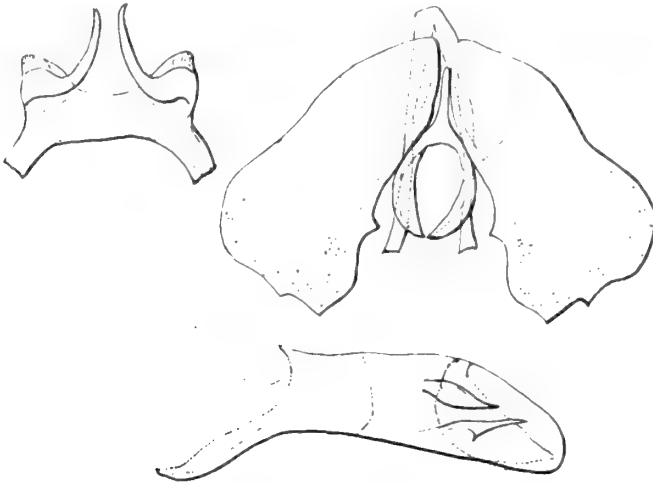


FIG. 126. *Iolus (Epamera) mimosae* Trimen, ♂ genitalia.



FIG. 127. *Iolus (Epamera) pollux pollux* Aurivillius, ♂ genitalia.

Group C :—Tegumen without median notch, lobes of the uncus confluent, subunci very weakly bent, valves small, penis elongate and strongly bent (except in *sapphirinus*) :—

*I. (E.) gemmarius* (Text-fig. 128), *sapphirus*, *bellina*, *sciophilus*, *cytaeis*, *nolaensis*, *sapphirinus*, *fontainei*.

Group D :—Tegumen without median notch, lobes of the uncus confluent, subunci curved, valves elongate and usually deeply divided at the apex, which is at times deeply incised, penis elongate, usually sharp-pointed :—

*I. (E.) frater* (Text-fig. 129), *hemicyanus*, *aethria*, *bansana*, *violacea*, *mermis*, *iasis*, *sibella*, *agnes*, *bakeri*, *pseudofrater*.

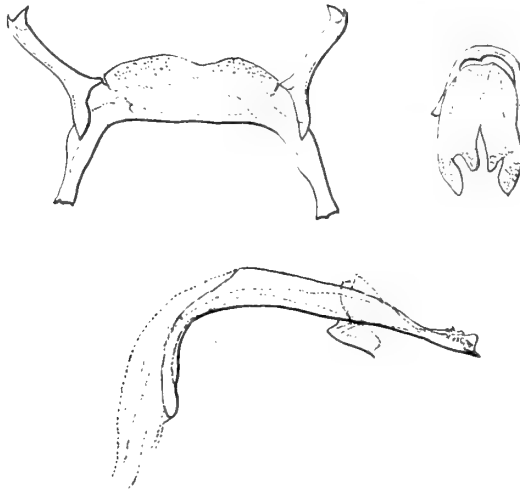


FIG. 128. *Iolaus (Epamera) gemmarius* Druce, ♂ genitalia.

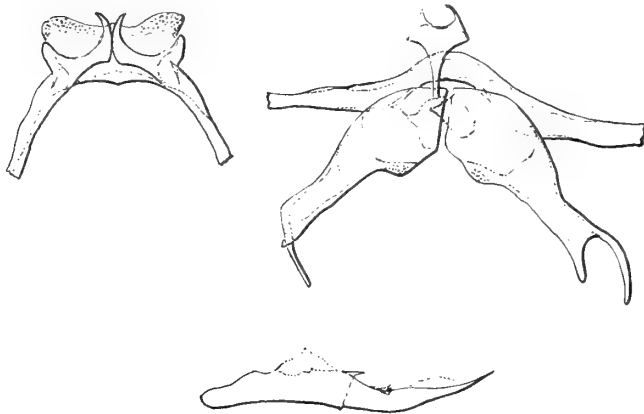


FIG. 129. *Iolaus (Epamera) frater frater* Joicey & Talbot, ♂ genitalia.

Group E :—Tegumen with only a hint of a median notch, lobes of the uncus separate, subunci short, scarcely bent, valves not incised, penis very elongate, curved, ending in a tapering point :—

*I. (E.) glaucus* (Text-fig. 130).

Group F :—Tegumen with more or less of a median notch, uncus consisting of two ribbons fused to the lateral margins of the tegumen, subunci curved, valves elongate, penis short, vesica enclosing spines :—

*I. (E.) alienus* (Text-fig. 131), *aemulus*, *obscurus*.



FIG. 130. *Iolais (Epamera) glaucus glaucus* Butler, ♂ genitalia.

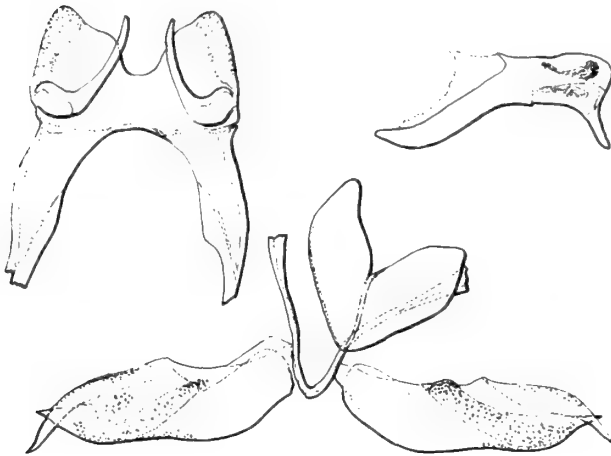


FIG. 131. *Iolais (Epamera) alienus alienus* Trimen, ♂ genitalia.

Group G :—Tegumen with a weak median notch, subunci robust, curved, valves strongly asymmetrical, penis robust :—

*I. (E.) maesa* (Text-fig. 132), *creta*.

The early stages of some of the species of *Epamera* have been described in the following papers :—

*E. bansana*, *E. sidus*, *E. tajoraca*, Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 214–6).

*E. iasis*, *E. farquharsoni*, *E. laon*, *E. maesa*, *E. aethria* (= *mirabilis*) Farquharson and Eltringham, (1922, *Trans. ent. Soc. Lond.* **1921** : 362–3, 481–2).

*E. mimosae*, *E. aemulus* Murray (1935 : 78, 80).

All the known caterpillars of *Epamera* live on leaves or flowers of species of *Loranthus* which are parasitic on various trees.

#### LIST OF SPECIES OF *Iolaus* (*Epamera*)

*Iolaus (Epamera) adamsi* Lathy, see *laon*.

\**Iolaus (Epamera) aemulus* Trimen, 1895. Fig. genitalia, Stempffer & Bennett, 1959.

*Iolaus (Epamera) aemulus* ♀-f. *apatosa* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 117, fig.

\**Iolaus (Epamera) aethria* Karsch, 1893 (♂). Fig. H. H. Druce, 1907 (as *mirabilis*). Fig. genitalia, Stempffer & Bennett, 1959.

*Iolaus (Epamera) aethria* Audeoud, 1936, see *bellina*.

\**Iolaus (Epamera) agnes* Aurivillius, 1897 (♂). Fig. and fig. genitalia, Stempffer & Bennett, 1959 ; fig. ♀, Stempffer, 1961 : 98.

*Iolaus (Epamera) alberici* Dufrane, 1945, see *creta*.

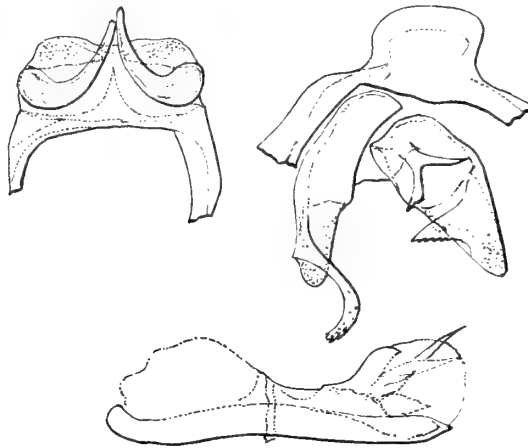


FIG. 132. *Iolaus (Epamera) maesa* (Hewitson), ♂ genitalia.



- \**Iolaus (Epamera) alienus alienus* Trimen, 1898.
- \**Iolaus (Epamera) alienus bicaudatus* Aurivillius, 1905 (♂). Fig. ♀ and fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) alienae ugandae* Stempffer, 1953, *Annls Mus. R. Congo Belge* 29. Fig. Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) aphnaeoides aphnaeoides* Trimen, 1873 (May). Fig. Hewitson, 1878. Fig. genitalia, Stempffer & Bennett, 1959.
- canissus* Hewitson, 1873 (November).
- \**Iolaus (Epamera) aphnaeoides diametra* Karsch, 1895. Fig. Aurivillius in Seitz, 1923. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) aphnaeoides mafugae* Stempffer & Bennett, 1959 : 249.
- \**Iolaus (Epamera) aphnaeoides nasissii* Riley, 1928, *Novit. zool.* 34 : 391, fig. (♀). Fig. ♂, Talbot, 1935, *Entomologist's mon. Mag.* 71 : 118.
- \**Iolaus (Epamera) arborifera* Butler, 1900 (♂). Fig. ♀ and genitalia, Stempffer & Bennett, 1959.
- Iolaus (Epamera) aurivilli* Röber, see *sapphirinus*.
- \**Iolaus (Epamera) australis* Stevenson, 1937, *Occ. Papers natn. Mus. Sth. Rhod.* 6 : 24. Fig. and fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) bakeri* Riley, 1928, *Novit. zool.* 34 : 388, fig. (♀). Fig. ♂, Pennington, 1953, *J. ent. Soc. sth. Afr.* 16 : 103. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) banco* Stempffer, 1966, *Bull. Inst. fond. Afr. noire* 28 : 1573, fig.
- Iolaus (Epamera) bansana bansana* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 395.
- \**Iolaus (Epamera) bansana yalae* Riley, 1928, *Novit. zool.* 34 : 385, fig. Fig. genitalia, Stempffer & Bennett, 1959.
- Iolaus (Epamera) belli* Hewitson, 1869 (♀) ; Aurivillius in Seitz, 1923 (♂).
- Iolaus (Epamera) belli* Aurivillius, nec Hewitson, see *pollux*.
- \**Iolaus (Epamera) bellina bellina* (Plötz), 1880. Fig. Aurivillius in Seitz, 1923. Fig. genitalia, Stempffer & Bennett, 1959.
- iaspis* H. H. Druce, 1890 ; *aethria* Audeoud, 1936 (♀).
- \**Iolaus (Epamera) bellina exquisita* Riley, 1928, *Novit. zool.* 34 : 388, fig. (♂). Fig. ♀, Stempffer, 1961, *Bull. Inst. fr. Afr. noire* 23 : 96.
- Iolaus (Epamera) bellina maris* Riley, 1928, *Novit. zool.* 34 : 388.
- Iolaus (Epamera) bertha* Suffert, see *iasis*.
- Iolaus (Epamera) bryki* Aurivillius, see *hemicyanus*.
- Iolaus (Epamera) canissus* Hewitson, see *aphnaeoides*.
- \**Iolaus (Epamera) coelestis* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 394 (♂). Fig. Stempffer, 1957, *Lycaen. Afrique noire franç.* Fig. ♀ and fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) creta* (Hewitson), 1878 (♂). Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 1227 (♀). Fig. genitalia, Stempffer & Bennett, 1959.
- fuscocomarginata* Joicey & Talbot, 1921 ; *alberici* Dufrane, 1945.

- \**Iolaus (Epamera) cytaeis cytaeis* Hewitson, 1875. Fig. Hewitson, 1878. Fig genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) cytaeis caerulea* Riley, 1928, *Novit. zool.* **34** : 390, fig. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) cytaeis leonis* Riley, 1928, *Novit. zool.* **34** : 390, fig. (♂) ; ♀, Stempffer & Bennett, 1959 : 276.
- \**Iolaus (Epamera) dubiosa* Stempffer & Bennett, 1959 : 310, fig. (♀). Fig. ♂ and genitalia, Stempffer, 1961, *Bull. Inst. fr. Afr. noire* **23** : 99.
- Iolaus (Epamera) emma* Suffert, see *laon*.
- \**Iolaus (Epamera) farquharsoni* Bethune Baker, 1922, *Trans. ent. Soc. Lond.* **1921** : 462. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) flavilinea* Riley, 1928, *Novit. zool.* **34** : 389, fig. (♂). Fig. genitalia, Stempffer & Bennett, 1959, ♀, Stempffer, 1962 : 1163.
- \**Iolaus (Epamera) fontainei* Stempffer, 1956 : 33, fig. and fig. genitalia (♂) ; ♀, Stempffer, 1962 : 1163.
- \**Iolaus (Epamera) frater frater* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 92, figs.
- Iolaus (Epamera) frater kamerunica* Riley, 1928, *Novit. zool.* **34** : 385, fig.
- Iolaus (Epamera) frater kumboae* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 397.
- Iolaus (Epamera) fuscomarginata* Joicey & Talbot, see *creta*.
- Iolaus (Epamera) gazei* H. H. Druce, see *scintillans*.
- \**Iolaus (Epamera) gemmarius* H. H. Druce, 1910 (♂). Fig. genitalia, Stempffer & Bennett, 1959 ; Stempffer, 1961, *Bull. Inst. fr. Afr. noire* **23** : 97, fig. (♀).
- \**Iolaus (Epamera) glaucus glaucus* Butler, 1886.
- \**Iolaus (Epamera) glaucus jordanus* Staudinger, 1897.
- Iolaus (Epamera) handmani* Gifford, 1965, *Butt. Malawi* : 52, figs.
- \**Iolaus (Epamera) hemicyanus hemicyanus* E. Sharpe, 1904, *Entomologist* **37** : 203. Fig. genitalia, Stempffer & Bennett, 1959.
- bryki* Aurivillius, 1925 ; *barbara toroensis* Riley, 1929.
- Iolaus (Epamera) hemicyanus barbara* Suffert, 1904. Fig. Aurivillius in Seitz, 1923.
- Iolaus (Epamera) hemicyanus barnsi* Joicey & Talbot, *Bull. Hill Mus. Witley* **1** : 92, fig. (♂) ; Stempffer & Bennett, 1959, fig. (♀).
- Iolaus (Epamera) hemicyanus mildbraedi* Schultze, 1910. Fig. Aurivillius in Seitz, 1923.
- yokoana* Bethune Baker, 1926.
- \**Iolaus (Epamera) iasis iasis* Hewitson, 1865. Fig. genitalia, Stempffer & Bennett, 1959.
- bertha* Suffert, 1904.
- \**Iolaus (Epamera) iasis albomaculatus* E. Sharpe, 1904, (♂) ; Talbot, 1937, *Trans. ent. Soc. Lond.* : **65**, fig. (♀).
- Iolaus (Epamera) iaspis* H. H. Druce, see *bellina*.
- \**Iolaus (Epamera) jacksoni* Stempffer, 1950, *Revue fr. Ent.* **17** : 139, fig. Fig.

- and fig. genitalia, Stempffer & Bennett, 1959.
- Iolaus (Epamera) katanganus* Romieux, see *violacea*.
- \**Iolaus (Epamera) laon* Hewitson, 1878 (♀); Aurivillius, 1898 (♂). Fig. genitalia, Stempffer & Bennett, 1959.  
*adamsi* Lathy, 1903; *emma* Suffert, 1904.
- \**Iolaus (Epamera) longicauda* Stempffer & Bennett, 1959 : 264, fig. and fig. genitalia.
- \**Iolaus (Epamera) maesa* (Hewitson), 1863 (♀); Riley, 1928, *Novit. zool.* **34** : 382, fig. (♂). Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) mermis* H. H. Druce, 1869 (♂). Fig. H. H. Druce, 1902, 1907 (♀); fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) mimosae mimosae* Trimen, 1874.
- \**Iolaus (Epamera) mimosae berbera* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 131.  
*septentrionalis* Stempffer, 1948.
- \**Iolaus (Epamera) mimosae haemus* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 118, fig. ♂; : 206, fig. ♀. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) mimosae rhodosense* Stempffer & Bennett, 1959 : 237.
- Iolaus (Epamera) mirabilis* H. H. Druce, see *aethria*.
- \**Iolaus (Epamera) moyambina* Stempffer & Bennett, 1959 : 254, figs. and fig. genitalia.
- \**Iolaus (Epamera) neavei neavei* H. H. Druce, 1910 (♂). Fig. genitalia, Stempffer & Bennett, 1959. Fig. ♀, Stempffer, 1961 : 58.  
*Iolaus (Epamera) neavei katera* Talbot, 1937, *Trans. ent. Soc. Lond.* **86** : 65, fig. (♂). Stempffer, 1961, *Bull. Inst. fr. Afr. noire* **23** : 99, fig. (♀).
- \**Iolaus (Epamera) nolaensis nolaensis* Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 125, fig.; l.c. 1952, 57 : figs.
- \**Iolaus (Epamera) nolaensis amanica* Stempffer, 1951, l.c. : 126; fig. 1952, l.c.
- \**Iolaus (Epamera) nursei* Bulter, 1896. Fig. Aurivillius in Seitz, 1923. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) obscurus* Aurivillius, 1923. Fig. genitalia, Stempffer & Bennett, 1959.
- Iolaus (Epamera) parva* Bethune Baker, see *pollux*.
- \**Iolaus (Epamera) penningtoni* Stempffer & Bennett, 1959 : 312, fig. and fig. genitalia.
- \**Iolaus (Epamera) pollux pollux* Aurivillius, 1895. Fig. genitalia, Stempffer & Bennett, 1959.  
*belli* Aurivillius nec Hewitson, 1898; *parva* Bethune Baker, 1926.
- \**Iolaus (Epamera) pollux albocaerulea* Riley, 1929, *Trans. ent. Soc. Lond.* **77** : 497, fig.
- \**Iolaus (Epamera) pollux oberthueri* Riley, 1929, l.c. : 496.
- \**Iolaus (Epamera) pseudofrater* Stempffer, 1962 : 1167, fig. and fig. genitalia.
- \**Iolaus (Epamera) pseudopollux* Stempffer, 1962 : 1164, fig.

- \**Iolaus (Epamera) sapphirinus* Aurivillius, 1897 (♂). Fig. Aurivillius, 1898. Aurivillius, 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, 1 : 558 (♀). Fig. genitalia Stempffer & Bennett, 1959, l.c.  
*aurivillii* Röber, 1900.
- \**Iolaus (Epamera) sappirus* H. H. Druce, 1902. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) scintillans* Aurivillius, 1905. Fig. genitalia, Stempffer & Bennett, 1959.  
*gazei* H. H. Druce, 1912.
- \**Iolaus (Epamera) sciophilus* Schultze, 1916. Fig. Aurivillius in Seitz, 1923. Fig. genitalia, Stempffer & Bennett, 1959.  
*Iolaus (Epamera) septentrionalis* Stempffer, see *mimosae berbera*.
- \**Iolaus (Epamera) sibella* H. H. Druce, 1910. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) sidus* Trimen, 1864. Fig. Hewitson, 1865.
- \**Iolaus (Epamera) silanus silanus* Smith, 1889. Fig. Seitz, 1923. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) silanus alticola* Stempffer, 1961, *Bull. Inst. fr. Afr. noire* 23 : 94, fig. and fig. genitalia.  
*Iolaus (Epamera) silanus silenus* Hawker Smith, 1928, *Rev. Zool. Bot. afr.* 16 : 214.
- \**Iolaus (Epamera) stenogrammica* Riley, 1928, *Novit. zool.* 34 : 384, fig. ♀. Fig. ♂ and genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) tajoraca tajoraca* Walker, 1870, (♂). Fig. genitalia, Stempffer & Bennett, 1959 ; fig. ♀, Stempffer, 1961, *Bull. Inst. fr. Afr. noire* 23 : 96.
- \**Iolaus (Epamera) tajoraca ertli* Aurivillius, 1926. Fig. genitalia, Stempffer & Bennett, 1959.  
*Iolaus (Epamera) toroensis* Riley, see *hemicyanus*.
- \**Iolaus (Epamera) umbrosa umbrosa* (Butler), 1885. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) umbrosa sudanica* Aurivillius, 1905. Fig. genitalia, Stempffer & Bennett, 1959.
- \**Iolaus (Epamera) violacea* Riley, 1928, *Novit. zool.* 34 : 386, fig. Fig. genitalia, Stempffer & Bennett, 1959.  
*katanganus* Romieux, 1934.
- Iolaus (Epamera) yokoana* Bethune Baker, see *hemicyanus mildbraedi*.

### **IOLAUS (ETESIOLAUS)** Stempffer & Bennett

*Etesiolaus* Stempffer & Bennett, 1959, *Bull. Inst. fr. Afr. noire* 21 : 319. Type-species : *Iolaus catori* Bethune Baker, 1904, by original designation.

*Iolaus* Hübner (partim) ; Aurivillius, 1923 : 394.

Eyes, palpi, antennae and legs as in the preceding subgenera.

*Wing shape.* ♂ fore wing inner margin lobed ; hind wing hind margin angled at vein 3, a delicate tail at vein 2, another much longer at vein 1b, anal angle lobed. Male secondary sexual characters : a hair tuft on the inner margin of the fore wing below, an androconial patch surrounded by a wide glossy area, at the base of the hind wing above.

*Wing venation.* Fore wing with 11 veins in both sexes.

*Male genitalia* (Text-fig. 133). Very different from all the other *Iolaus*, justifying separation as a distinct subgenus. Uncus composed of two small lobes roughly subtriangular in shape and distally strongly serrate ; tegumen very big, but with its distal margin deeply indented, centrally reduced to a narrow band ; vinculum broad, with a short round saccus ; lower fulcrum carried on a short stalk ; valves small in relation to the dorsal structures, deeply incised the two processes separate almost to the base, upper process with serrate apical edge ; the distal part of the lower process cut to form sharp teeth of which the longest is bent back like a sickle ; penis small, almost straight, the outer part tapering evenly ; uncus and upper process of valves lightly pilose.

LIST OF SPECIES OF *Iolaus* (*Etesiolaus*)

\**Iolaus (Etesiolaus) catori catori* Bethune Baker, 1904, *Ann. Mag. nat. Hist.* (7) **14** : 233 (♂). Riley, 1928, *Novit. zool.* **34** : 380, fig. (♀).

*Iolaus (Etesiolaus) catori cottoni* Bethune Baker, 1908, *Proc. zool. Soc. Lond.* : 113, fig. (♂). Fig. Riley, 1928, *Novit. zool.* **34** : 380. (♀).

**IOLAUS (SUKIDION) H. H. Druce**

*Sukidion* H. H. Druce, 1891, *Ann. Mag. nat. Hist.* (6) **8** : 142. Type-species : *Iolaus inores* Hewitson, 1872, by original designation.

*Iolaus* Hübner (partim) ; Aurivillius, 1898 : 324 ; 1923 : 397.

This species is very seldom represented in collections. It was described on the basis of the unique male now in the British Museum (Natural History) the provenance of which could be Gaboon or even the East Indies<sup>1</sup>. I am indebted to the late

<sup>1</sup> While the present work was already in page proof, I was informed by Lt. Col. C. F. Cowan that *I. (S.) inores* had recently been collected in N. E. Borneo, thus confirming that its distribution is Indo-Malayan, not African.



FIG. 133. *Iolaus (Etesiolaus) catori catori* Bethune Baker, ♂ genitalia.

Dr. A. S. Corbet, of the British Museum, for the loan of the slide of the male genitalia of the holotype and the gift of a photograph of its venation. Other characters are derived from the descriptions of H. H. Druce and Aurivillius.

*Head* broad ; eyes large ; antennae long, with a well differentiated, elongate club.

*Wing shape.* Fore wing with costa very convex at its base, then almost straight, outer margin straight, slightly scalloped at the ends of the veins, inner margin straight, with a fringe of long black hairs below from near the base to the inner angle ; hind wing almost circular, not produced at the anal angle, two short, fine tails at the ends of veins 2 and 1b respectively. No secondary ♂ sexual characters.

*Wing venation* (Text-fig. 298). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 134). Uncus composed of two lobes with rounded apices which are slightly folded over inwards, one on either side of the deep indentation of the posterior margin of the tegumen ; subunci with massive bases, bent in an acute angle, the free portion tapering regularly to the apex, the lower edge bearing at the bend a short, pointed apophysis ; tegumen large ; vinculum narrow, with a poorly marked saccus ; lower fultura with strong valves oblong, deeply notched at the apices ; penis elongate, with a vesica bearing many cornuti which give it a shagreened appearance ; uncus bears many long hairs, a few short hairs on the apices of the valves.

#### LIST OF SPECIES OF *Iolaus* (*Sukidion*)

\**Iolaus* (*Sukidion*) *inoves* Hewitson, 1872. Fig. Hewitson, 1878.

#### *IOLAUS* SPECIES INCERTAE SEDIS

*Iolaus bilineata* Bethune Baker, 1908, *Proc. zool. Soc. Lond.* 1908: 113.

Described from a unique female in a private collection, which I have been unable to examine. The description does not enable one to decide to which subgenus it belongs.

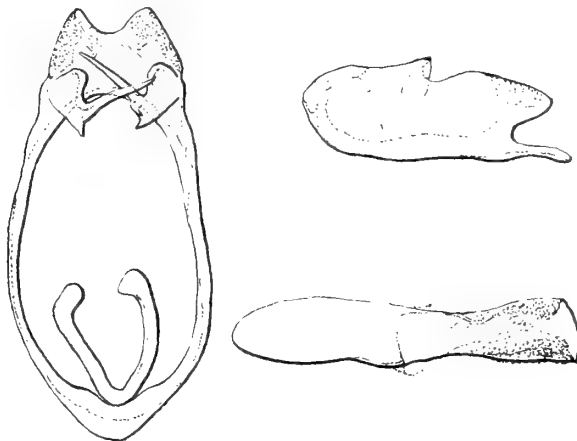


FIG. 134. *Iolaus* (*Sukidion*) *inoves* Hewitson, ♂ genitalia of type.

Genus **APHNAEUS** Hübner

*Aphnaeus* Hübner, 1826, *Verz. bek. Schmett.* : 81 ; Aurivillius, 1898 : 327 ; 1924 : 407 ; Pinhey, 1949 : 104. Type-species : *Papilio orcas* Drury, 1782, designated by Scudder (1875, *Proc. Am. Acad. Arts Sci.* **10** : 116).

*Eyes* clothed in dense short hair ; palpi fairly long, parallel, second segment long, slightly ascending, clothed with dense scales, third segment very short, slender, horizontal, with blunt apex ; antennae three-fifths the length of the costa, club progressively swollen, not well differentiated ; ♂ fore leg with tibia as long as femur, tarsus unsegmented, femur bearing long black hairs, tibia and tarsus bearing strong spines ; mid and hind legs, femora bearing long black hairs, tibiae as long as femora, metatarsi very long.

*Wing shape.* Fore wing subtriangular with pointed apex ; hind wing much produced at the anal angle, a delicate tail at the end of vein 2, a longer tail at the end of vein 1b, an anal lobe, the abdominal margin excised between the lobe and the end of 1a.

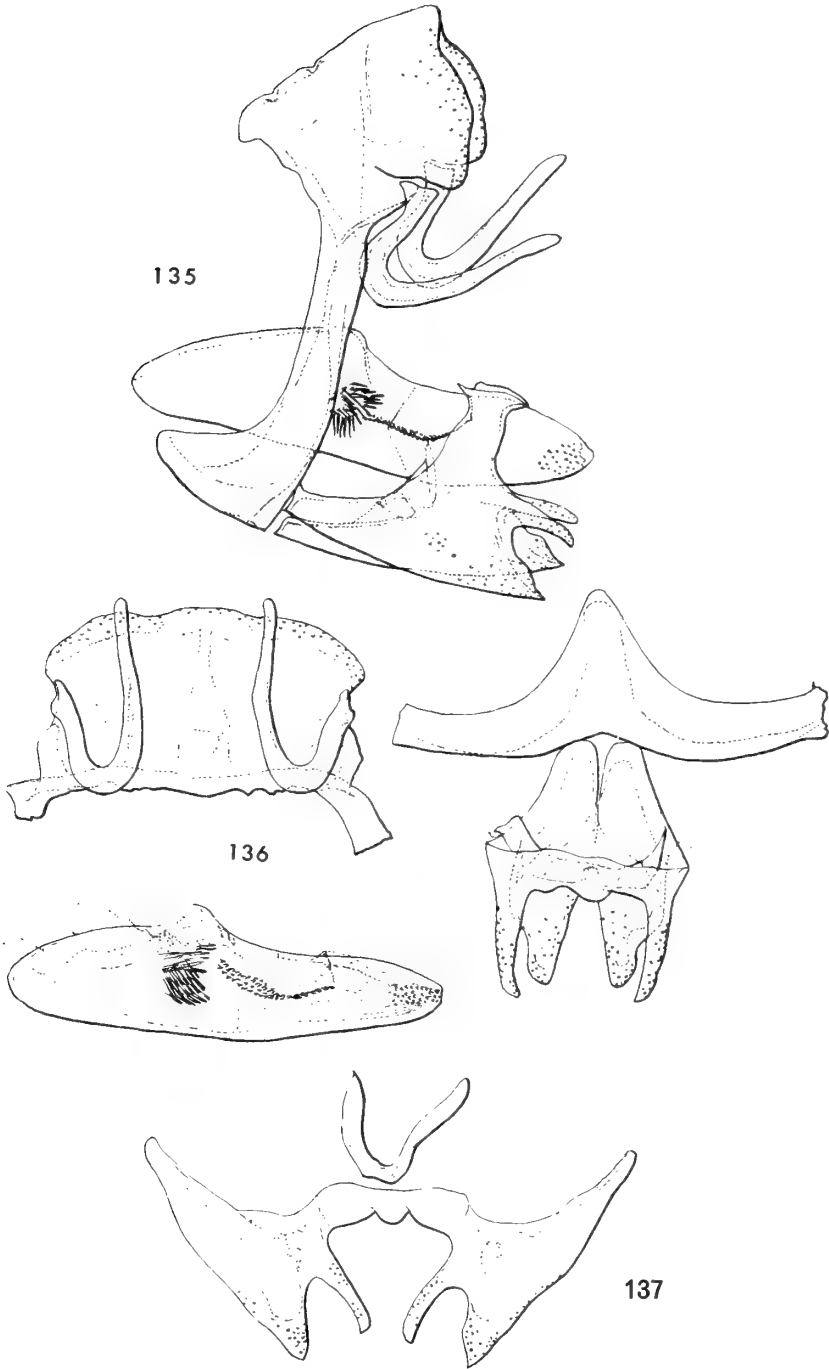
*Wing venation* (Text-fig. 299). Fore wing with 12 veins.

*Male genitalia* (Text-fig. 135 : side view ; Text-fig. 136 : dissected, with the parts separated and spread out ; Text-fig. 137 : view of the valves detached from the vinculum and rotated through 180° in order to give a better view of the median band). Uncus reduced to a narrow strip bordering the edge of the tegumen ; subunci long, bent in an acute angle, apices blunt ; tegumen subrectangular, hood-shaped ; vinculum fairly broad with a short rounded saccus ; lower fultura composed of two flattened arms attached to the valves about midway, not to their base near the vinculum ; valves elongate, the upper and lower processes distinctly separate in their distal half and both having rounded apices, the upper process being more slender and a little longer than the lower one ; a weakly sclerotized band unites the two upper processes, passing above the external portion of the penis, which thus lies between the body of the valves and this band ; penis large, with a protuberance on its upper surface situated a little before the wall of the genital cavity, the external portion tapering gradually to a blunt apex ; the vesica enclosing in its base a tuft of long, strong spines, and midway and at the apex a group of cornuti ; uncus and distal portions of the valves pilose. The genitalia of the other species of *Aphnaeus* are similar to those of *orcas*.

This peculiar arrangement of valves sheathing the penis is not confined to the genus *Aphnaeus*, similar structures being found in the allied genera *Cigaritis* (palae-arctic), *Apharitis*, *Spindasis*, *Chloroselas*, *Zeritis*, *Desmolycaena*, *Axiocerses*, *Phasis* and *Erikssonia*, and in nearly all species of these genera the markings on the under-side of the wings show some likeness to those of species of *Aphnaeus*, e.g. the presence of metallic or nacreous bands, spots or dots. The median band uniting the valves may easily escape observation because it is very little sclerotized, translucent, and so fragile that it is difficult not to break it when dissecting out the penis ; when broken it is easy to mistake it for some membranous fragment.

LIST OF SPECIES OF *Aphnaeus*

- \**Aphnaeus adamsi* Stempffer, 1954 : 513, fig. and fig. genitalia.
- \**Aphnaeus affinis affinis* Riley, 1921, *Trans. ent. Soc. Lond.* **54** : 249, figs. Fig. genitalia, Stempffer, 1954.
- \**Aphnaeus affinis seydeli* Berger, 1952, *Lambillionea* **52** : 68. Fig. Stempffer, 1954.
- \**Aphnaeus argyrocyclus* Holland, 1890. Fig. Holland, 1893. Fig. genitalia, Stempffer, 1954.
- propinquus* Holland, 1893.



FIGS 135-137. *Aphnaeus orcas orcas* (Drury), ♂ genitalia.



- \**Aphnaeus asterius* Plötz, 1880. Fig. E. Sharpe, 1890. Fig. genitalia, Stempffer, 1954.  
*chalybeatus* E. Sharpe, 1890 ; *ilogo* Holland, 1890.
- \**Aphnaeus asterius* f. *argenteola* Holland, 1890.
- \**Aphnaeus brahami* Lathy, 1903. Fig. genitalia, Stempffer, 1954.  
*Aphnaeus bruneeli* Berger, see *erikssoni*.  
*Aphnaeus chalybeatus* E. Sharpe, see *asterius*.
- Aphnaeus chapini chapini* (Holland), 1920, *Bull. Am. Mus. nat. Hist.* **43** : 225, fig.  
*Aphnaeus chapini occidentalis* Clench, 1963, *Ent. News* **74** : 46.
- \**Aphnaeus chapini ugandae* Stempffer, 1961 : 59, fig.
- \**Aphnaeus coronae coronae* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 118, figs. ♂. Fig. genitalia and fig. ♀, Stempffer, 1954.
- \**Aphnaeus coronae* f. *vansomereni* Stempffer, 1954 : 512, fig.  
*Aphnaeus coronae littoralis* Carcasson, 1964, *Jl E. Africa nat. Hist. Soc.* **24** : 71, fig.
- Aphnaeus erikssoni erikssoni* Trimen, 1891, ♀. Fig. ♂ genitalia, Stempffer, 1954.  
*bruneeli* Berger, 1951.
- \**Aphnaeus erikssoni barnesi* Stempffer, 1954 : 507, fig.
- \**Aphnaeus erikssoni mashunae* Stempffer, 1954 : 507.  
*erikssoni* (♂) Trimen, 1898.
- \**Aphnaeus erikssoni rex* Aurivillius, 1909, ♀ ; ♂, Stempffer, 1954 : 509.
- \**Aphnaeus flavescens flavescens* Stempffer, 1954 : 514, fig. and fig. genitalia.  
*Aphnaeus flavescens williamsi* Carcasson, 1964, *Jl E. Africa nat. Hist. Soc.* **24** : 70, fig.  
*Aphnaeus gilloni* Stempffer, 1966, *Bull. Inst. fond. Afr. noire*, **28** : 1575, fig.  
*Aphnaeus heliodorus* Schultze, see *orcas hollandi*.
- \**Aphnaeus jacksoni* Stempffer, 1954 : 512, fig. and fig. genitalia.
- \**Aphnaeus jefferyi* Hawker-Smith, 1928, *Bull. Hill Mus. Witley* **2** : 30 (♀) ; ♂, and fig. genitalia, Stempffer, 1954.  
*Aphnaeus ilogo* Holland see *asterius*.
- \**Aphnaeus marshalli* Neave, 1910. Fig. genitalia, Stempffer, 1954.
- \**Aphnaeus neavei* Bethune Baker, 1926. Fig. and fig. genitalia, Stempffer, 1954.
- \**Aphnaeus nyanzae* Stempffer, 1954 : 499, fig. and fig. genitalia.
- \**Aphnaeus orcas orcas* (Drury), 1782. Fig. genitalia, Stempffer, 1954.
- \**Aphnaeus orcas* f. *fontainei* Berger, 1952, *Lambillionea* **52** : 70.
- \**Aphnaeus orcas* f. *overlaeti* Berger, 1952, l.c. : 70.
- \**Aphnaeus orcas* f. *paupera* Stempffer, 1954 : 498, fig.
- \**Aphnaeus orcas hollandi* Butler, 1902.  
*rattrayi* E. Sharpe, 1904 ; *heliodorus* Schultze, 1916.  
*Aphnaeus propinquus* Holland, see *argyrocyclus*.
- \**Aphnaeus questiauxi* Aurivillius, 1903 (♂). Fig. genitalia, Stempffer, 1954 ; ♀, Neave, 1910.  
*Aphnaeus rattrayi* E. Sharpe, see *orcas hollandi*.

Genus *PARAPHNAEUS* Thierry-Mieg

*Paraphnaeus* Thierry-Mieg, 1904, *Naturaliste* : 140. Type-species : *Aphnaeus hutchinsoni* Trimen, by monotypy.

*Aphnaeus* Hübner (partim) ; Aurivillius, 1898 : 328 ; 1924 : 409 ; Murray, 1935 : 82 ; Swanepoel, 1953 : 163.

*Eyes*, palpi and antennae similar to those of *Aphnaeus* ; thorax robust, clothed below with long silky hairs ; ♂ fore leg, femur clothed with long fulvous hairs, tibia shorter than the femur, tarsus short, unsegmented, bearing many spines below ; mid and hind legs with tibiae shorter than femora, metatarsi long.

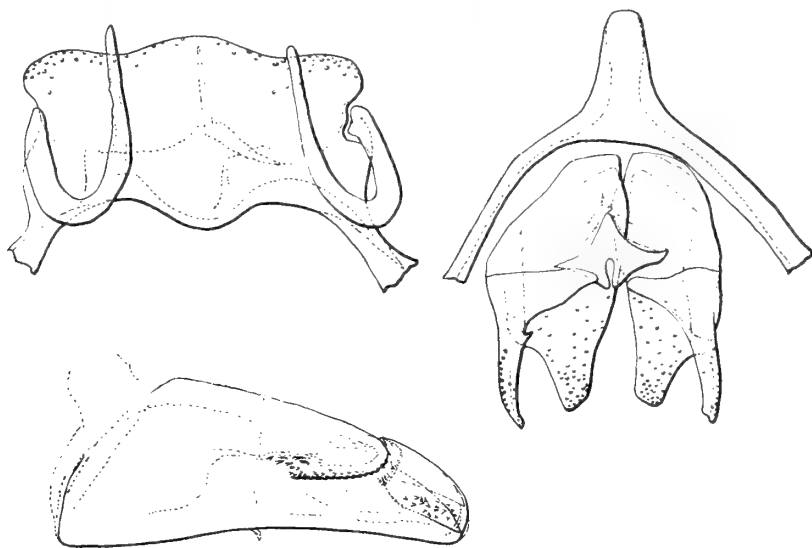
*Wing shape*. Similar to that of *Aphnaeus* except that the outer margin of the fore wing is a little more convex between the apex and the ending of vein 4.

*Wing venation* (Text-fig. 300). Same as that of *Aphnaeus*.

*Male genitalia* (Text-fig. 138). Uncus, subunci and tegumen as in *Aphnaeus*, except that the posterior edge of the dorsum has a rounded median prominence ; vinculum fairly wide ; lower fultura consists of a small shield-shaped plate with a deep notch in the upper edge ; valves like those of *Aphnaeus*, the upper and lower processes of each valve separated in their distal halves, the middle portions of the upper processes folded over the inner face and connected by a membranous strip which passes above the penis ; penis very bulky, internal portion swollen, the external portion bearing on the dorsal surface, at the base, a sort of lobe bearing short regular teeth on its inferior edge, the apex of penis split into two longitudinally ; vesica with cornuti ; uncus and distal half of valves clothed with fine hairs.

The early stages of *P. hutchinsoni drucei* Neave have been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 216). The caterpillar lives on *Acacia stenocarpa* Hochst., *Entada abyssinica* Stend., and on certain species of *Loranthus* in symbiosis with ants.

The genus *Paraphnaeus*, which has only one species, is very closely allied to the genus *Aphnaeus*, except that the lower fultura reminds one of that of *Apharitis* and *Spindasis*, and that the shape of the penis differs slightly from that of *Aphnaeus*.



FIGS. 138. *Paraphnaeus hutchinsoni hutchinsoni* (Trimen), ♂ genitalia.

LIST OF SPECIES OF *Paraphnaeus*

- \**Paraphnaeus hutchinsoni hutchinsoni* (Trimen), 1887. Fig. Butler, 1898.  
*zanzibarensis* (Smith), 1889.
- \**Paraphnaeus hutchinsoni drucei* (Neave), 1904.  
*Paraphnaeus zanzibarensis* (Smith), see *hutchinsoni*.

Genus *APHARITIS* Riley

*Apharitis* Riley, 1925, *Novit. zool.* **32** : 78. Type-species : *Polyommatus epargyros* Eversman (a palaeartic species), by original designation.

*Spindasis* Wallengren (partim) ; Aurivillius, 1898 : 332 ; 1924, 414.

*Eyes* glabrous ; palpi fairly long, second segment long, laterally compressed, clothed below with dense white adpressed scales, third segment rather short, slightly inflected, acuminate ; antennae slightly longer than half the length of the costa, white-annulated, club elongate, flattened, rust-coloured below ; thorax robust, clothed below with long silky hairs ; ♂ fore leg with tibia as long as femur, tarsus unsegmented, finely spinose below ; mid and hind legs with tibiae shorter than femora, metatarsi very long.

*Wing shape.* Fore wing with apex pointed, outer margin convex between the apex and vein 4, slightly concave between vein 4 and the inner angle ; hind wing with costa much arched, apex rounded, outer margin slightly concave between veins 4 and 2, angular at the end of vein 2, a delicate tail at the end of 1b, a small lobe at the anal angle.

*Wing venation* (Text-fig. 301). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 139 ; for lateral view see Riley, 1925, fig. 5). Uncus composed of two subtriangular lobes with rounded apices and separated by a deep groove in the hind margin of the tegumen ; subunci long and robust, strongly bent at about two-fifths of their length and tapering gradually to a blunt apex ; tegumen rather small, *in situ* uncus and tegumen together are hood-shaped ; vinculum fairly wide, with a short, broad saccus ; lower futura consists of a small shield-shaped plate which is deeply indented on its upper edge ; valves subtriangular with blunt apices, their upper processes folded inwards and connected midway by a narrow membranous band, which passes over the penis in the same way as in species of *Aphnaeus*, *Paraphnaeus*, *Spindasis*, etc. ; penis robust, with a cylindrical basal portion, the dorsal surface distinctly at an angle to the general axis, as in species of *Spindasis* (Riley, 1925, calls it "funnel-shaped") ; the ventral surface of the external portion is gutter-

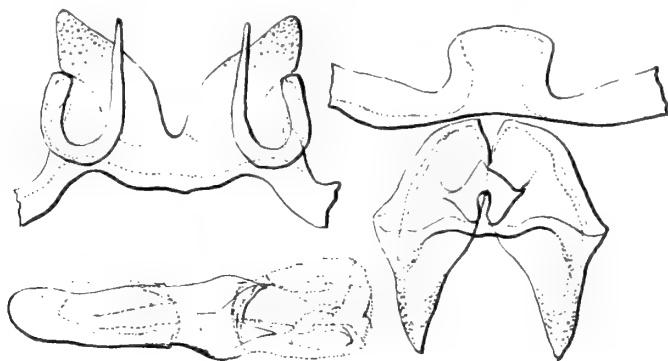


FIG. 139. *Apharitis epargyros* (Eversman), ♂ genitalia.

shaped and longer than the dorsal surface; vesica unarmed; uncus and apices of valves finely pilose. (*Note.* In the mount from which this figure was drawn the penis has unfortunately undergone a partial rotation, so that the characters given in the description are not clearly shown in the figure.)

The genitalia of the Ethiopian species of *Apharitis* examined are very similar to those of *A. epargyros*.

The early stages of the *Apharitis* from tropical Africa are unknown. Those of *A. myrmecophila* Dumont, from Tunisia, and of *A. acamas chitralensis* Riley, from Chitral, have been observed. The caterpillar of *A. myrmecophila* is nocturnal in its habits, and lives and pupates at the foot of tufts of *Calligonum comosum* L'Herit (Polygonaceae), in the large tunnels made by ants.

#### LIST OF ETHIOPIAN SPECIES OF *Apharitis*

- \**Apharitis acamas bellatrix* (Butler), 1886. Fig. Klug, 1834.  
*Apharitis buchanani* (Rothschild), 1921, *Novit. zool.* **28** : 155 (♀). Talbot, 1942, *Entomologist* **75** : 249 (♂).  
*Apharitis gilletti* Riley, 1925, *Novit. zool.* **32** : 85, fig. genitalia.  
 \**Apharitis nilus* (Hewitson), 1865. Fig. Aurivillius in Seitz, 1924. Fig. genitalia, Riley, 1925, l.c.  
*subaureus* (Smith), 1898.  
*Apharitis nilus* f. *kaduglii* (Bethune Baker), 1916.  
*Apharitis nilus* f. *sabulosa* (Hawker Smith), 1929, *Bull. Hill Mus. Witley* **3** : 231.  
*Apharitis subaureus* (Smith), see *nilus*.

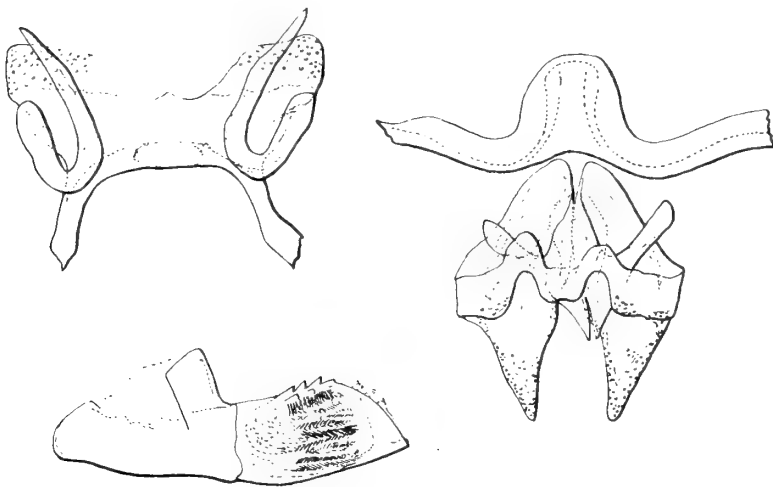


FIG. 140. *Spindasis natalensis* (Doubleday & Hewitson), ♂ genitalia.

Genus *SPINDASIS* Wallengren

*Spindasis* Wallengren, 1857, *K. svenska VetenskAkad. Handl.*, (n.f.) 2 (1) 4 : 45 ; Murray, 1935 : 83 ; Pinhey, 1949 : 104 ; Swanepoel, 1953 : 165. Type-species : *Spindasis masilikazi* Wallengren, 1857 (*Aphnaeus natalensis* Westwood, 1851), by monotypy.

*Spindasis* Wallengren (partim) ; Aurivillius, 1898 : 328 ; 1923 : 410.

*Eyes* glabrous ; palpi fairly long, slightly divergent, second segment long, ascending and clothed with dense scales, third segment horizontal, short ; antennae slightly longer than half the length of the costa, club fusiform, not well differentiated ; thorax robust, clothed with long silky hair ; abdomen black and white-annulated ; ♂ fore leg, femur clothed with long, white, silky hair, tibia slightly shorter than the femur and armed below with long spines, tarsus unsegmented and also armed below with numerous spines ; mid and hind legs strong, femora clothed with long white hair, tibiae shorter than the femora and bearing apical spurs, tarsi long, segmented and bearing numerous spines.

*Wing shape.* Fore wing triangular, the apex pointed ; hind wing produced, a delicate tail at the end of vein 2 and a longer one at the end of 1b, a small lobe at the anal angle.

*Wing venation* (Text-fig. 502). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 140). Uncus composed of two lobes with straight posterior edges and rounded apices, widely separated by a shallow rounded depression with a small median prominence ; subunci long and robust, bent at an acute angle at about two-fifths of their length ; tegumen large and trapezoidal, tegumen and uncus together *in situ* are hood-shaped ; vinculum rather broad with a rounded saccus ; lower fultura shield-shaped, with a deep notch in its upper edge ; valves elongate, subtriangular, with an almost straight inferior edge and blunt apices, the two upper processes connected by a weakly sclerotized median band, which passes above the penis as in species of *Aphnaeus* and allied genera ; penis short, massive, with cylindrical basal portion widely open dorsally, the dorsal surface then becoming bent at an acute angle to the general axis of the penis, the large prominence thus formed being held, in the natural position, in a notch of the upper edge of the median band, which unites the valves, an arrangement which must circumscribe considerably the possible movement of the penis during copulation ; the external portion of penis swollen, with an obliquely cut apex, its dorsal edge bristling with short spines ; vesica with numerous fine cornuti ; the lobes of the uncus, apices of the valves and lower edge of the median band, all pilose.

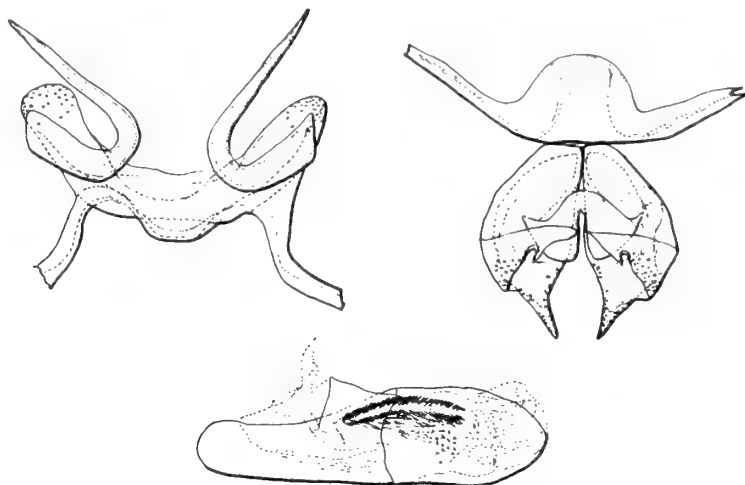


FIG. 141. *Spindasis phanes* (Trimen), ♂ genitalia.

The genitalia of *Spindasis nyassae*, *victoriae*, *mozambica*, *apelles*, *tavetensis* and *banyoana* are similar to those of *natalensis*. Those of *S. phanes* (Text-fig. 141) are also of the same type, except that the lobes of the uncus are more lanceolate, the tegumen is narrower in the middle and its anterior margin forms a rounded prominence. The genitalia of *S. homeyeri*, *trimeni*, *namaqua*, *somalina*, *ella*, *iza* and *cynica* are more or less close to those of *phanes*. The armature of *S. waggae* (Text-fig. 142) is different from the preceding species, the tegumen being more ample and quadrangular, and the subunci less robust.

The larvae of *S. natalensis*, *mozambica* and *ella* have been described by Murray (1935 : 86, 88, 89) and Pinhey (1949 : 105). They live on *Vigna angustifolia* and *Mundulea subrosa*. Those of *S. nyassae* have been found on the bark of *Acacia stenocarpa* and *Entada abyssinica*, look like larvae of Lymantriidae, and live in company with ants ; in captivity they soon die if separated from the ants (see Jackson, 1937, *Trans. R. ent. Soc. Lond.* 1937 : 217).

#### LIST OF SPECIES OF *Spindasis*

- \**Spindasis apelles apelles* (Oberthur), 1878.
- Spindasis apelles nairobiensis* E. Sharpe, 1904.
- Spindasis apuleia* Hulstaert, 1924, *Revue zool. afr.* 12 : 127.
- Spindasis avriko* (Karsch), 1893.
- Spindasis baghirmi* Stempffer, 1946, *Revue fr. Ent.* 13 : 14, fig.
- \**Spindasis banyoana* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) 17 : 398.
- Spindasis brunnea* Jackson, 1965, *Ann. Mag. nat. Hist.* (13) 8 : 529, fig.
- Spindasis caffer* (Trimen), see *mozambica*.
- Spindasis chaka* (Wallengren), see *ella*.
- Spindasis crustaria crustaria* (Holland), 1890. Fig. Holland, 1893.

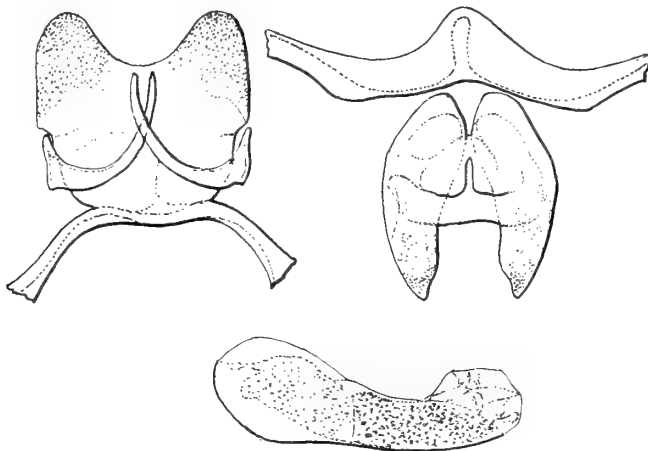


FIG. 142. *Spindasis waggae* Sharpe, ♂ genitalia.

- Spindasis crustaria mysteriosa* Clench, 1965, *Butt. Liberia* : 360, figs.  
 \**Spindasis cynica* Riley, 1921, *Trans. ent. Soc. Lond.* **54** : 247, figs.  
 \**Spindasis ella* (Hewitson), 1865.  
     *chaka* (Wallengren), 1875.  
 \**Spindasis ella* f. *barnesi* Stempffer, 1953, *Annls Mus. R. Congo belge* **27** : 30.  
     *Spindasis erna* (Staudinger), see *phanes*.  
 \**Spindasis homeyeri homeyeri* (Dewitz), 1886.  
 \**Spindasis homeyeri* f. *fracta* Stempffer, 1948, *Revue fr. Ent.* **15** : 189.  
     *Spindasis homeyeri kallimon* H. H. Druce, 1905.  
 \**Spindasis iza* (Hewitson), 1865.  
     *Spindasis lutosa* (Plötz), 1880.  
     *Spindasis masilikazi* Wallengren, see *natalensis*.  
     *Spindasis menelas* H. H. Druce, 1907.  
     *Spindasis modestus* (Trimen), 1891.  
     *Spindasis montana* Joicey & Talbot, 1924, *Bull. Hill Mus. Witley* **1** : 545.  
 \**Spindasis mozambica* (Bertoloni), 1851. Fig. Hewitson, 1865, (as *natalensis*).  
     *caffer* (Trimen), 1868.  
 \**Spindasis namaqua* (Trimen), 1874.  
 \**Spindasis natalensis* (Westwood), 1851.  
     *masilikazi* Wallengren, 1857.  
     *Spindasis natalensis* f. *obscura* Aurivillius, 1923.  
 \**Spindasis nyassae* (Butler), 1884. Fig. Butler, 1894.  
 \**Spindasis phanes* (Trimen), 1873.  
     *erna* (Staudinger), 1888.  
     *Spindasis scotti* Gabriel, 1954, *Expd. S.W. Arabia* 1937/38 : 378, fig.  
 \**Spindasis somalina* Butler, 1886.  
 \**Spindasis tivetensis* Lathy, 1906.  
 \**Spindasis trimeni trimeni* Neave, 1910.  
     *Spindasis trimeni congolanus* Dufrane, 1954, *Bull. Annls Soc. R. ent. Belg.* **90** :  
     283.  
 \**Spindasis victoriae* (Butler), 1884. Fig. Aurivillius in Seitz, 1923.  
 \**Spindasis waggae* E. Sharpe, 1898. Fig. Aurivillius in Seitz, 1923.

Genus **LIPAPHNAEUS** Aurivillius

*Lipaphnaeus* Aurivillius, 1916, *Ark. Zool.* **10** (14) : 2. Type-species : *Aphnaeus spindasoides* Aurivillius, 1916 (a subspecies of *Aphnaeus aderna* Plötz, 1880), by original designation.  
*Spindasis* Aurivillius (partim) ; Aurivillius, 1898 : 332 ; 1923 : 415.

*Eyes*, palpi, antennae and legs as in *Spindasis*.

*Wing shape* like that of *Spindasis*, except that in *aderna* and *loxura* the tail at the end of vein 1b on the hind wing is wider than that of *Spindasis*, which is thread-like.

*Venation* is not constant in *Lipaphnaeus*. Vein 8 of the fore wing is very short and often absent. When Aurivillius described *spindasoides* in 1916 he attributed to it 12 veins in the fore wing and placed it in the genus *Aphnaeus*, then, at the end of the text, he designated it as type of a " subgenus *Lipaphnaeus* ", intermediate between *Aphnaeus* and *Spindasis*. In 1923

(in Seitz, *Grossschmett. Erde* : 413) he went back on his original opinion in these words : " By a regrettable error of observation, I was induced to describe this form as an *Aphnaeus* ; on a closer examination I have found that the fore wing has only 11 veins, vein 8 being absent and vein 7 terminating at the apex of the wing as in all the species of *Spindasis*. The form is in fact so closely allied to *S. aderna* that I can now only consider it to be the eastern race of it ". This statement, however, only confuses the issue because when I was able to examine closely the holotype of *spindasoides*, preserved in the Natural History Museum at Stockholm, I found that in fact it had 12 veins in the fore wing.

From an examination of a fairly large number of specimens of *Lipaphnaeus*, the following facts emerge :

*L. aderna aderna* : 1 ♀ Ghana, 1 ♀ Katanga : 11 veins.

*L. aderna spindasoides* : 3 ♂ S. Rhodesia, 12 veins ; 1 ♀ S. Rhodesia, 1 ♀ Mozambique : 11 veins.

*L. aderna pan* : 3 ♂, 2 ♀ Uganda : 11 veins.

*L. leonina bitje* : 2 ♂, 1 ♀ Middle Congo, 1 ♀ Katanga : 11 veins.

*L. loxura* : 2 ♂ Katanga, 1 ♂ Uganda : 12 veins ; 3 ♀ Uganda, 11 veins.

*L. eustorgia* : 1 ♀ Katanga : 11 veins.

I give these figures with some reserve because, when present, vein 8 is very difficult to detect, even when the wing is soaked in alcohol. To be absolutely certain, it is necessary to remove the scales completely by immersing the wing in Eau-de-Javelle, which results in permanent damage to the specimen. However, I do not think I made a mistake in every case, and can only conclude that *Lipaphnaeus* sometimes has 12, sometimes 11 veins in the fore wing. One interesting fact emerges from the figures, which naturally, are too small to be the basis of safe conclusions : whilst the males are almost equally divided (6 : 5) between 12 and 11 veins, none of the females has more than 11. *Lipaphnaeus* is much better characterized by its ♂ genitalia, in which the dorsal structures sharply differ from *Spindasis*.

*Male genitalia (aderna aderna, Text-fig. 143).* Uncus subtriangular, deeply divided to form two tapering points ; subunci long, very slender, evenly curved and folded (when *in situ*) inwardly below the uncus ; tegumen very small, well differentiated from the vinculum ; vinculum narrow dorsally, wider ventrally, with a rounded saccus ; inferior fultura lozenge-shaped, deeply divided distally ; valves oblong, tapering to a point, the upper processes united midway by a narrow band as in *Spindasis* ; penis elongate, much less massive than in *Spindasis*, devoid of dorsal protuberance but with a rounded depression midway on dorsal margin, the outer portion tapering to a blunt end ; margins of uncus and apex of valves pilose.

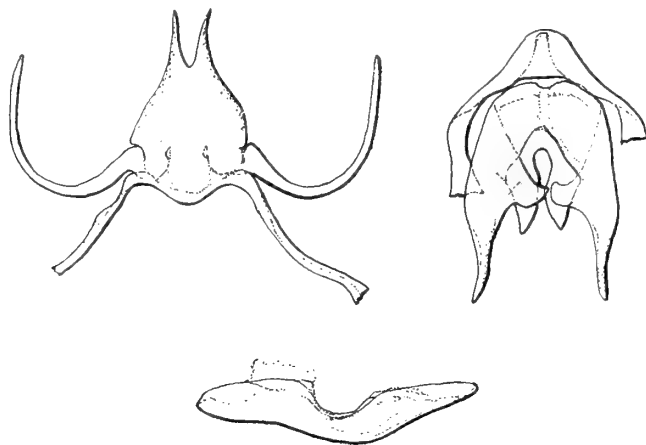


FIG. 143. *Lipaphnaeus aderna aderna* (Plötz), ♂ genitalia.



The male genitalia of *aderna spindasoides* are identical to those of *aderna aderna*. Those of *loxura* and *leonina* (Text-fig. 144) are slightly different, but of the same type. I have not been able to examine *eustorgia*, of which only the female holotype is known.

The armatures of the three species of *Lipaphnaeus* examined are remote from those of *Spindasis*, but, on the other hand very close to those of *Chloroselas* and *Desmolycaena*. Their general appearance is similarly different from *Spindasis*. I conclude that *Lipaphnaeus* is a distinct, valid genus, not a subgenus.

LIST OF SPECIES OF *Lipaphnaeus*

- \****Lipaphnaeus aderna aderna*** (Plötz), 1880. Fig. Crowley, 1890 (as *fallax* and *latifimbriata*).  
*fallax* (E. Sharpe), 1890 ; *latifimbriata* (E. Sharpe), 1890.
- \****Lipaphnaeus aderna pan*** (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 120, fig.
- \****Lipaphnaeus aderna spindasoides*** (Aurivillius), 1916.  
*Lipaphnaeus bicolor* (E. Sharpe), see *leonina*.
- Lipaphnaeus eustorgia*** (Hulstaert), 1924, *Revue zool. afr.* **12** : 128.
- Lipaphnaeus fallax*** (E. Sharpe), see *aderna*.
- Lipaphnaeus latifimbriata*** (E. Sharpe), see *aderna*.
- Lipaphnaeus leonina leonina*** (E. Sharpe), 1890. Fig. Crowley, 1890.  
*bicolor* (E. Sharpe), 1891.
- \****Lipaphnaeus leonina bitje*** (H. H. Druce), 1910.
- Lipaphnaeus leonina ivoirensis*** Stempffer, 1966, *Bull. Inst. fond. Afr. noire* **28** : 1577, fig.
- Lipaphnaeus leonina paradoxa*** (Schultze), 1908.
- \****Lipaphnaeus loxura*** (Rebel), 1914.

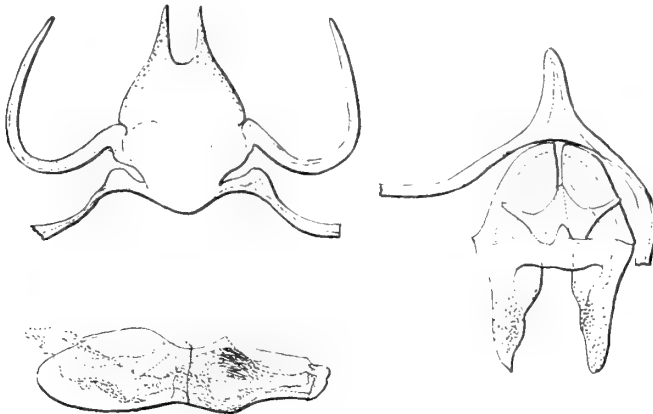


FIG. 144. *Lipaphnaeus leonina leonina* (Sharpe), ♂ genitalia.

Genus *CHLOROSELAS* Butler

*Chloroselas* Butler, 1886, *Proc. zool. Soc. Lond.* **1885** : 765 ; Aurivillius, 1898 : 323 ; 1923 : 416 ; Murray, 1935 : 90 ; Swanepoel, 1953 : 168. Type-species : *Chloroselas esmeralda* Butler, 1886, by original designation.

Eyes glabrous ; palpi long, reaching beyond the frons, second segment ascending, wider and more curved than in *Spindasis*, clothed below with large erect scales, third segment horizontal, shorter than in *Spindasis*, clothed with adpressed scales ; antennae more slender than those of *Spindasis*, with a better differentiated, fusiform club ; thorax clothed below with white hair ; abdomen white-annulated ; ♂ fore leg more slender than in *Spindasis*, tibia shorter than the femur, tarsus long, unsegmented, spinose below.

*Wing shape.* Hind wing produced at the anal angle, a delicate tail at the end of 1b (in *pseudozeritis*, *overlaeti*, *azurea* and *taposana* there is also a short delicate tail at the extremity of vein 2), an indistinct lobe at the anal angle.

*Wing venation* (Text-fig. 303). Fore wing with 10 or 11 veins ; vein 11 is sometimes absent entirely ; when present, it is reduced to a short stalk joining the upper margin of the cell to the costal vein ; veins 6 and 7 are also sometimes slightly stalked. Individual variations of this kind are frequent.

*Male genitalia* (Text-fig. 145). Dorsally similar to *Lipaphnaeus*, except that the apex of the uncus is less deeply divided and the lateral margins are serrate ; subunci long, evenly curved and tapering ; tegumen reduced, intimately fused to the uncus but not with the vinculum ; vinculum narrow with a subtriangular saccus ; lower fultura shield-shaped, with deeply notched apex ; valves oblong with blunt apices, their basal thirds fused together, the upper processes connected midway by a membranous band which surrounds the penis as in the preceding genera ; internal portion of penis ovoid, the external portion cylindrical with an obliquely truncate apex ; vesica with large cornuti ; uncus and distal extremity of valves pilose.

The male genitalia of *pseudozeritis*, *overlaeti*, *argentea* and *azurea* closely resemble those of *C. esmeralda*, and in the first three the vesica encloses a sheaf of long, fine spines ; in *azurea* the external portion of the penis is slightly shorter and the vesica and devoid of cornuti.

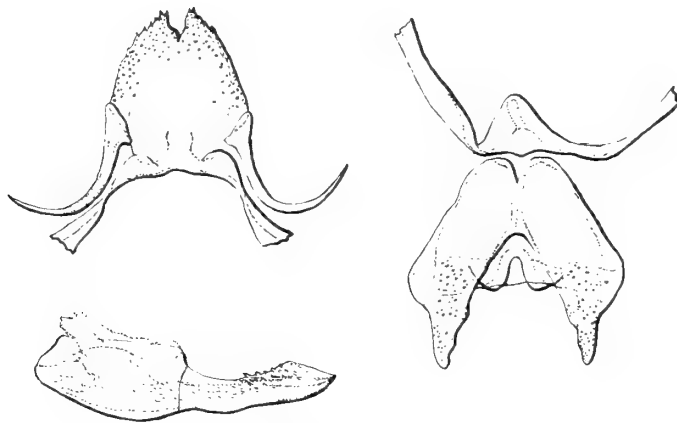


FIG. 145. *Chloroselas tamaniba esmeralda* Butler, ♂ genitalia.

The caterpillar of *C. pseudozeritis tytleri* Riley has been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 218). It lives on *Acacia stenocarpa* Hochst. (ex. A. Rich) (Leguminosae), in symbiosis with ants of the genus *Crematogaster*.

LIST OF SPECIES OF *Chloroselas*

- \**Chloroselas argentea* Riley, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 145, fig.
- \**Chloroselas azurea* Butler, 1899.
- Chloroselas minima* Jackson, 1965, *Ann. Mag. nat. Hist.* (13) **8** : 524, fig.
- Chloroselas ogadenensis* Jackson, 1965, l.c. : 526, fig.
- \**Chloroselas overlaeti* Stempffer, 1956 : 36, fig.
- \**Chloroselas pseudozeritis pseudozeritis* (Trimen), 1873.
- \**Chloroselas pseudozeritis tytleri* Riley, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 147, fig.
- Chloroselas pseudozeritis tytleri* f. *umbrosa* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 207, fig.
- Chloroselas tamaniba tamaniba* (Walker), 1870.
- \**Chloroselas tamaniba esmeralda* Butler, 1886.
- Chloroselas taposana* Riley, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 146, fig.
- Chloroselas vansomereni* Jackson, 1965, l.c. : 525, fig.

Genus **ZERITIS** Boisduval

*Zeritis* Boisduval, 1836, *Spec. Gen. Lep.* **1**, pl. 22, fig. 6 ; Aurivillius (as a "gen. nov."), 1898 : 333 ; 1924 : 417. Type-species : *Zeritis neriene* Boisduval, by monotypy. Aurivillius, believing Boisduval's *Zeritis* invalid, re-introduced the name as new.

*Eyes* glabrous ; palpi rather short but extending beyond the frons, second segment clothed with long white scales, third segment cylindrical with rounded apex ; antennae about half the length of the costa, club elongated, not well differentiated ; ♂ fore leg with tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing apex angular, outer margin very convex ; hind wing with two short, delicate tails, at the ends of vein 2 and 1b, a small lobe at the anal angle.

*Wing venation* (Text-fig. 304). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 146). Uncus composed of two subtriangular rounded lobes ; subunci long, curved, with robust bases, tapering gradually to the apices with, on the inner margin of the basal half, a long apophysis ; tegumen with convex anterior edge ; *in situ* uncus and tegumen together are hood-shaped ; vinculum rather narrow, prolonged to form a short triangular saccus ; lower fultura fused to the base of the valves, asymmetrical, one branch having a spatulate apex bearing short spines, the other distinctly longer branch having a slightly serrate edge and tapering gradually to the pointed apex ; valves oblong, their upper processes connected by a membrane as in the preceding genera ; penis long, robust, weakly curved, with an obliquely truncated apex ; vesica containing numerous small cornuti ; uncus and distal portions of the valves pilose.

The male genitalia of *Z. pulcherima* resembles so closely those of *Z. neriene* that one wonders whether these are two species or just two forms of one species, differing only by the markings on the underside of the wings. The male genitalia of *Z. sorhageni* and *fontainei*, whilst being of the same type as those of *Z. neriene*, differ

from them in the following particulars :—in *Z. sorhageni* the lobes of the uncus are quadrangular, the subunci bear two small apophyses instead of one large one, and the two branches of the lower fultura are much stouter, though still asymmetrical. In *fontainei* the lobes of the uncus are rounded, there is only one small apophysis on the lower margin of the subunci, the protuberance on the margin of the tegumen is rounded and very large, and the branches of the inferior fultura are as in *sorhageni*. In the shape of the uncus, tegumen and subunci, the species of *Zeritis* are more closely allied to species of *Axiocerses* than to those of *Chloroselas* and *Desmolycaena*.

#### LIST OF SPECIES OF *Zeritis*

*Zeritis aurivillii* Schultze, 1908. Fig. Aurivillius in Seitz, 1924.

\**Zeritis fontainei* Stempffer, 1956 : 35, fig.

\**Zeritis neriene neriene* Boisduval, 1836.

*Zeritis neriene* f. *muzizii* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 134.

*Zeritis neriene amine* (Butler), 1874.

\**Zeritis pulcherrima* Aurivillius, 1916. Fig. Aurivillius in Seitz, 1924.

\**Zeritis sorhageni* (Dewitz), 1879.

#### Genus *DESMOLYCAENA* Trimen

*Desmolycaena* Trimen, 1898, *Trans. ent. Soc. Lond.* **1898** : 7 ; Aurivillius, 1898 : 334 ; 1924 : 419 ; Swanepoel, 1953 : 169. Type-species : *Desmolycaena mazoensis* Trimen, by original designation.

*Eyes* glabrous ; *palpi* long, ascending beyond the frons, second segment long, flattened laterally, clothed below with long, erect scales, third segment very short, slender, cylindrical, with obtuse apex, clothed with adpressed scales ; *antennae* three-fifths of length of costa, rather slender with a well differentiated, fusiform club ; *thorax* clothed below with long white



FIG. 146. *Zeritis neriene neriene* Boisduval, ♂ genitalia.

hair ; legs short, rather robust ; ♂ fore leg with femur clothed with white hairs, tibia shorter than femur, tarsus rather long, unsegmented, bearing long spines below.

*Wing shape.* Fore wing with apex angular ; hind wing with a small filiform tail at the end of vein 1b.

*Wing venation* (Text-fig. 305). Fore wing with 11 veins ; 11 free, but very close to the costal vein and sometimes in contact with it. As in *Chloroselas*, variations in the venation are not rare. Riley cited examples in his original description of *rogersi*.

*Male genitalia* (Text-fig. 147). The ♂ genitalia of *D. mazoensis* are very similar to those of *Chloroselas esmeralda*, except that the lateral margins of the uncus are not serrate and the apical depression is rounded instead of triangular ; the subunci are a little shorter and the vesica has no cornuti.

The male genitalia of *D. arabica* are almost identical with those of *D. mazoensis*. On the other hand, those of *D. rogersi* (Text-fig. 148) differ considerably ; the dorsum is rectangular instead of oval and the subunci are reduced to two rudiments ; the inferior fultura, valves and penis are as in *D. mazoensis*. By the structure of the genitalia as well as by the markings of the wings, the species of the genus *Desmolycaena* are closely allied to those of *Chloroselas*.



FIG. 147. *Desmolycaena mazoensis* Trimen, ♂ genitalia.



FIG. 148. *Desmolycaena rogersi* Riley, ♂ genitalia.

LIST OF SPECIES OF *Desmolycaena*

\**Desmolycaena arabica* Riley, 1932, *Ann. Mag. nat. Hist.* (10) 10 : 148, fig.

\**Desmolycaena mazoensis* Trimen, 1898.

\**Desmolycaena rogersi* Riley, 1932 *Ann. Mag. nat. Hist.* (10) 10 : 149, fig.

Genus **AXIOCERSES** Hübner

*Axiocerses* Hübner, 1826, *Verz. bek. Schmett.* : 71 ; Aurivillius, 1898 : 334 ; 1924 : 419 ; Murray, 1935 : 91 ; Pinhey, 1949 : 105 ; Swanepoel, 1953 ; 162. Type-species : *Papilio perion* Stoll, 1781 (i.e. *Papilio harpax* Fabricius, 1775), by monotypy.  
*Chryсорichia* Wallengren, 1857, *Rhop. Caffr.* : 44.

In 1857 Wallengren (*Rhop. Caffr.* : 44) erected the genus *Chryсорichia* for what he regarded as two species, which he called *thyra* Linn and *tjoane* sp. nov. These, according to Aurivillius, who had access to the type specimens, were in fact the male and female respectively of the species now known as *Axiocerses harpax* Fabricius. However, in 1875 Scudder selected "*thyra* Linn" as the type-species. According to the present International Rules of Zoological Nomenclature, Article 70, a case such as this, in which the type-species of a genus has obviously been misidentified, is to be submitted to the Commission for a ruling. I propose therefore to invite the Commission to designate *Papilio harpax* Fabricius as the type-species of *Chryсорichia*, which will make that name an objective synonym of *Axiocerses*, and in the meantime to regard *Chryсорichia* as such.

*Eyes* glabrous ; frons clothed with erect hairs ; palpi rather short, parallel, hardly protruding beyond the frons, second segment clothed with erect scales and hair, third segment short, acuminate, slightly ascending ; antennae more than half the length of the costa, white-annulated, club cylindrical, well differentiated ; thorax robust, clothed above with long silky hair and below with close woolly hair ; ♂ fore leg very robust, tibia as long as femur, both densely

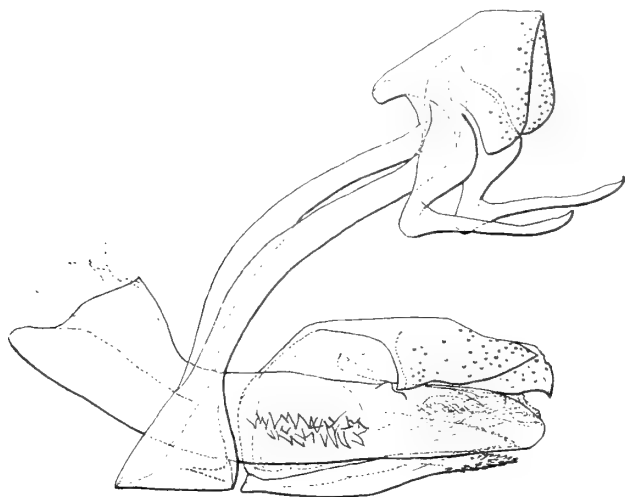


FIG. 149. *Axiocerses harpax harpax* (Fabricius), ♂ genitalia.

clothed with hair, tibia with a dorsal outer spur and two inner apical spines, tarsus stout, unsegmented, clothed with short adpressed hair and bearing below long spines, the apical claw slightly curved ; mid and hind legs very robust, with tibiae shorter than femora, tarsi long and stout, strongly spinose below, the metatarsus very long.

*Wing shape.* Fore wing with apex pointed, outer margin angled at the end of vein 4 ; hind wing oval, produced at the anal angle, outer margin slightly scalloped at the ends of the veins, a delicate tail at the end of vein 1b, a small, well marked lobe at the anal angle.

*Wing venation* (Text-fig. 306). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 149, side view of genitalia, right valve removed and other parts *in situ* ; Text-fig. 150, postero-ventral view of genitalia, parts separated and flattened out) : uncus composed of two oval lobes ; subunci long, much swollen basally, bent in an acute angle, the free branch slender and ending in a widely open claw, the lower edge bearing a short apophysis at the angle ; tegumen lozenge-shaped ; *in situ* uncus and tegumen together are hood-shaped ; vinculum fairly wide, prolonged to form a short, robust saccus ; lower fultura composed of two long conical processes bristling with strong spines at the tip ; valves oblong, their upper processes rolled back on to the inner surface and connected in the middle by a thinly sclerotized band which passes above the penis ; penis long and robust, slightly curved, its internal portion swollen ; vesica (exserted in Text-fig. 150) encloses a number of large cornuti ; uncus and upper processes of the valves pilose.

In *bambana* the inferior fultura is formed of two suboval lobes with rounded ends, a character which permits its easy separation from *harpax*, a species with which it is easily confused if reliance is placed only on the very variable external appearance (cf. Stempffer, 1957, *Bull. Inst. fr. Afr. noire* 19 : 217).

On the other hand, in *amanga* the two branches of the inferior fultura are very long and tapering and extend beyond the tips of the valves.



FIG. 150. *Axiocerses harpax harpax* (Fabricius) ♂ tegumen, penis ; *harpax* f. *kadugli* Talbot, valves.

In *punicea* and *jacksoni* the inferior fultura is composed of lobes which are clearly longer than in *bambana*, and in *jacksoni* the subunci are devoid of apophyses.

The early stages of *A. amanga* have been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 219) and Pinhey, 1949 : 106. The caterpillar lives on the leaves of *Ximenia americana* L., in symbiosis with ants (*Camponotus niveosetosus* Mayr). The caterpillar of the widely distributed *A. harpax* is so far unknown.

#### LIST OF SPECIES OF *Axiocerses*

- \**Axiocerses amanga amanga* (Westwood), 1881. Fig. Trimen, 1887.
- \**Axiocerses amanga mendeche* (Smith), 1889. Fig. Aurivillius in Seitz, 1924.  
*mendeche bistrigata* Aurivillius, 1924 (♀).
- Axiocerses amanga mendeche borealis* Aurivillius, 1915.
- Axiocerses argenteomaculata* Pagenstecher, 1902.
- \**Axiocerses bambana* Smith, 1900.  
*mendeche bistrigata* Aurivillius, 1924 (♂).
- Axiocerses baumi* Weymer, 1901.
- Axiocerses croesus* (Trimen), see *harpax*.
- Axiocerses cruenta* (Trimen), see *punicea*.
- \**Axiocerses harpax harpax* (Fabricius), 1775. Fig. Cramer, 1781 (as *perion*).  
*tjoane* (Wallengren), 1857 ; *croesus* (Trimen), 1862 ; *harpax piscatoris* Clench, 1943.
- \**Axiocerses harpax* f. *perion* (Cramer), 1781.
- \**Axiocerses harpax* f. *kadugli* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 120, pl. 2, fig. 9.
- Axiocerses harpax efulena* Clench, 1963, *Jl New York ent. Soc.* **71** : 183.
- Axiocerses harpax styx* Rebel, 1908.
- Axiocerses harpax piscatoris* Clench, see *harpax*.
- Axiocerses harpax ugandana* Clench, 1863, l.c. : 184.
- \**Axiocerses jacksoni* Stempffer, 1948, *Revue fr. Ent.* **15** : 19, fig. genitalia.
- Axiocerses maureli* Dufrane, 1954, *Bull. Annl. Soc. R. ent. Belg.* **90** : 284.
- \**Axiocerses mendeche bistrigata* Aurivillius ; ♂ see *bambana* ; ♀ see *amanga mendeche*.
- \**Axiocerses punicea* (Smith), 1889. Fig. Trimen, 1894 (as *cruenta*).  
*cruenta* (Trimen), 1894.
- Axiocerses tjoane* (Wallengren), see *harpax*.

#### Genus *LEPTOMYRINA* (*LEPTOMYRINA*) Butler

*Leptomyrina* Butler, 1898, *Proc. zool. Soc. Lond.* **1898** : 405 ; Aurivillius, 1898 : 335 ; 1924 : 421 ; Murray, 1935 : 93 ; Pinhey, 1949 : 106 ; Swanepoel, 1953 : 171. Type-species : *Hesperia phidias* Fabricius, 1793, by original designation.

Eyes smooth ; vertex and frons clothed with long erect hair ; palpi fairly long, horizontal, widely divergent, second segment clothed below with erect bristles, third segment long, acuminate ; antennae slender, a little longer than half the length of the costa, white-annulated, club



short, ovoid, abruptly swollen ; thorax clothed above with long silky hair and below with close-set white hair ; ♂ fore leg with tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing apex angular, outer margin slightly convex, inner margin straight ; hind wing oval, produced at the anal angle, outer margin slightly scalloped, a filiform tail at the end of vein 1b, a lobe at the anal angle, abdominal margin concave between the lobe and vein 1a.

*Wing venation* (Text-fig. 307). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 151). Uncus composed of two lobes with rounded apices, separated by the depression in the posterior margin of the tegumen ; subunci long, robust, bent at an acute angle, tapering gradually to the apex, a short apophysis on the lower edge at the bend ; tegumen large, hood-shaped ; vinculum very wide with a short saccus ; no lower fultura ; valves small in relation to the dorsal structures, simple, apical margin serrate, upper margin with a protuberance at the second point of attachment ; penis elongate, swollen at the base and slightly expanded at the apex ; vesica covered with fine cornuti which give it a shagreened appearance ; uncus and distal halves of valves finely pilose.

The male genitalia of *Leptomyrina* are quite similar to those of certain *Hypolycaena*. It seems to me therefore that these two genera ought to be placed close together and not far apart as in Aurivillius' classification, in which *Leptomyrina* is inserted between the group containing *Aphnaeus*, *Spindasis*, *Axiocerses* etc., and the *Phasis* group, with which they have no true affinity, at least no more than a resemblance in external facies.

The male genitalia of *L. hirundo*, *L. boschi* and *L. sudanica* closely resemble those of *L. phidias*.

LIST OF SPECIES OF *Leptomyrina* (*Leptomyrina*)

\**Leptomyrina boschi* Strand, 1911. Fig. Aurivillius in Seitz, 1924.

*Leptomyrina handmani* Gifford, 1965, *Butt. Malawi* : 53, figs.

\**Leptomyrina hirundo* (Wallengren), 1857. Fig. Trimen, 1866.

*Leptomyrina makala* Bethune Baker, 1908.

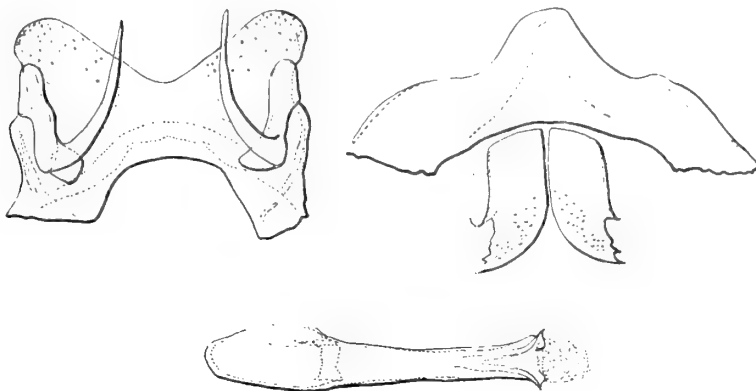


FIG. 151. *Leptomyrina* (*Leptomyrina*) *phidias* (Fabricius), ♂ genitalia.

\**Leptomyrina phidias* (Fabricius), 1793. Fig. Mabille, 1885.

*rabe* (Boisduval), 1833.

*Leptomyrina rabe* (Boisduval), see *phidias*.

\**Leptomyrina sudanica* Stempffer, 1964 : 1285, fig.

### **LEPTOMYRINA (GONATOMYRINA) Aurivillius**

*Gonatomyrina* Aurivillius, 1924, in Seitz, *Macrolep. World* **13** : 422. Type-species : *Papilio lara* Linnaeus, 1764, by monotypy.

Only distinguished from other species of *Leptomyrina* by the shape of the hind wing in which the filiform tail at vein 1b is lacking but, on the other hand, the actual anal angle is produced as a triangular prolongation which forms a kind of broad, blunt tail. The anal lobe is absent. These characters are accentuated in *L. gorgias* which Aurivillius regarded as a variety of *lara*.

*Male genitalia* (Text-fig. 152). Similar to those of other species of *Leptomyrina* ; those of *gorgias* almost identical with *lara*.

The early stages of *Gonatomyrina* have been dealt with in the following publications :—Murray, 1935 ; Clark and Dickson, 1944, *J. ent. Soc. sth. Afr.* **7** : 97 and 1947, **10** : 128 ; Pinhey 1949 : 106. The larvae of *lara* and *gorgias* live within the leaves of fleshy plants of the genera *Cotyledon*, *Kalanchoe*, *Echeveria*, *Crassula* and *Mesembryanthemum*, feeding on their tissues. It was principally on the characters of larval chaetotaxy that Clark and Dickson specifically separated *gorgias* and *lara* (1957, *J. ent. Soc. sth. Afr.* **20** : 333).

#### LIST OF SPECIES OF *Leptomyrina* (*Gonatomyrina*)

\**Leptomyrina (Gonatomyrina) gorgias* (Stoll), 1790.

\**Leptomyrina (Gonatomyrina) lara lara* (Linne), 1764.

*Leptomyrina (Gonatomyrina) lara cana* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 121.

*Leptomyrina (Gonatomyrina) lara sobrina* Talbot, 1935 : 121.

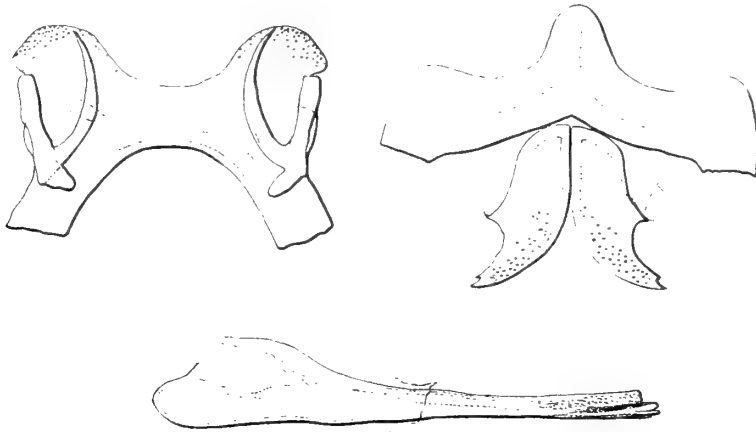


FIG. 152. *Leptomyrina (Gonatomyrina) lara lara* (Linnaeus), ♂ genitalia.

Genus *CAPYS* Hewitson

*Capys* Hewitson, 1865, *Ill. Diurn. Lep.* : 59 ; Aurivillius, 1898 : 337, 1924 : 423 ; Murray, 1935 : 36 ; Swanepoel, 1953 : 156. Type-species : *Papilio alphaeus* Cramer, 1777, by original designation.

*Scoptes* Hübner, [1819], *Verz. bek. Schmett.* : 111, an unused senior synonym of *Capys* is the subject of an application to the Commission, under Article 23 (b), for rejection.

*Head* broad ; eyes large, densely pilose ; frons clothed with erect hair ; palpi horizontal, second segment laterally compressed, third segment short and slender in the ♂, slender but much longer in the ♀ ; antennae about two-thirds the length of the costa, club fusiform, well differentiated ; thorax robust, clothed with long hair ; ♂ fore leg with tibia much shorter than femur, tarsus unsegmented, finely spinose below ; mid and hind legs with tibiae shorter than femora, metatarsi very long.

*Wing shape.* Fore wing, apex pointed, outer margin very oblique ; hind wing oval, produced at the anal angle, outer margin slightly scalloped, a short obtuse projection at the end of vein 1b. Male secondary sexual characters : on underside of fore wing a tuft of hairs in the middle of the inner margin ; on upperside of hind wing a small scaly spot at the origin of vein 7. These characters are present in the type-species, *alphaeus*, and in *disjunctus* and *penningtoni* ; they are absent in *brunneus* and *catharus*.

*Wing venation* (Text-fig. 308). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 153). Uncus composed of two lobes separated by the rounded depression of the distal margin of the tegumen ; subunci long, bent at an acute angle, tapering gradually in the apical third ; tegumen large, *in situ* hood-shaped ; vinculum narrow with an indistinct saccus ; no lower fultura ; valves very elongate, narrow, fused together on the lower edge for about half their length, apex slightly hook-shaped ; penis elongate, widely open dorsally for almost the whole length of its internal portion, the external portion narrowing gradually to a slightly wider, obliquely truncate apex ; vesica with a series of large cornuti and many smaller ones ; uncus and upper edges of the distal part of valves clothed with long, fine hair.

The male genitalia of *C. catharus* are almost identical with those of *C. alphaeus*, except for some minor differences in the valves. The male genitalia of these two species of *Capys* resemble those of species of *Deudorix* and indicate a generic affinity to which Hewitson called attention in his original description of *Capys*.

The early stages of *C. alphaeus* and *C. disjunctus* Trimen have been described by Dr. J. Lunt and J. F. Leigh (see Murray, 1935 : 97-8) and by C. G. C. Dickson (1947, *J. ent. Soc. sth. Afr.* **10** : 128). The larva of *penningtoni* has been described by Pennington (1946, *J. ent. Soc. sth. Afr.* **9** : 22).

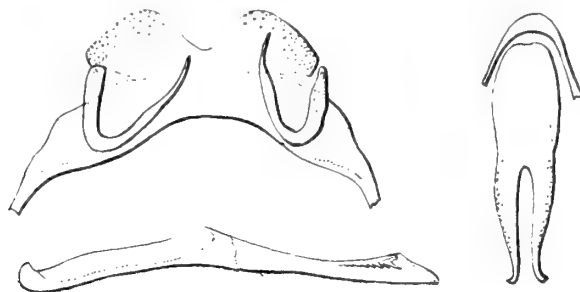


FIG. 153. *Capys alphaeus* (Cramer), ♂ genitalia.

LIST OF SPECIES OF *Capys*

- \**Capys alphaeus* (Cramer), 1777.  
*brunneus* Aurivillius, 1916.
- \**Capys catharus catharus* Riley, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 144, fig. (♂) ; Stoneham, 1938, *Bull. Stoneham Mus.* No. **36** : 36 (♀).
- Capys catharus rileyi* Stoneham, 1938, l.c. : 36.
- Capys disjunctus disjunctus* Trimen, 1895.
- Capys disjunctus bamendanus* Schultze, 1909.
- Capys disjunctus connexivus* Butler, 1897.
- Capys penningtoni* Riley, 1932, *Ann. Mag. nat. Hist.* (10) **10** : 142, fig.

Genus *PHASIS* Hübner

*Phasis* Hübner, 1826, *Verz. bekannt. Schmett.* : 73. Type-species : *Papilio salmoneus* Cramer, 1781 (*Papilio thero* Linnaeus, 1764) designated by Scudder, 1875.

*Phasis* Hübner (partim), Aurivillius, 1898 : 337 ; 1924 : 424 ; Swanepoel, 1953 : 121.

*Pseudocapys* Murray, 1935 : 106. Type-species, by original designation, *Papilio thero* Linnaeus.

Murray (1935 : 103) erroneously attempted to designate, as type-species of *Phasis*, *Papilio pierus* Cramer, which was not one of the originally included species (see *Aloeides*). *Pseudocapys* Murray is an objective junior synonym of *Phasis* Hübner.

*Head* rather broad ; eyes glabrous ; frons clothed with long, erect hair ; palpi long, second segment robust, ascending, clothed with scales, third segment rather long, slender ; antennae about half the length of the costa, robust, gradually increasing in thickness to the clavate end ; thorax robust, clothed below with woolly hair ; ♂ fore leg with tarsus unsegmented.

*Wing shape.* Fore wing with costa arched at the base then straight, apex truncate, outer margin straight from the apex to vein 5, deeply concave between veins 5 and 3 and convex

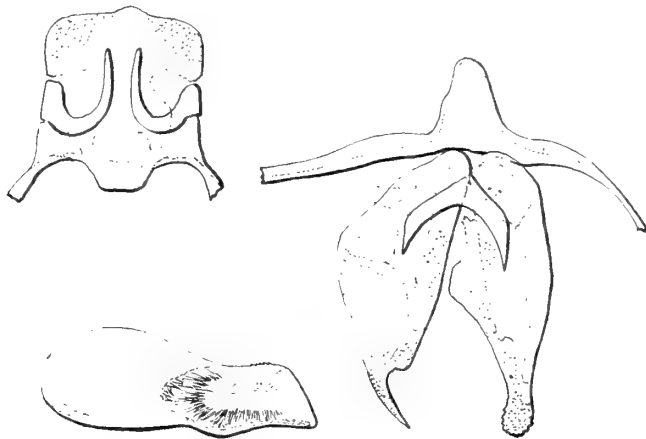


FIG. 154. *Phasis thero thero* (Linnaeus), ♂ genitalia.

from 3 to the inner angle ; hind wing subtriangular, costa convex at the base, outer margin scalloped at the ends of vein 5 to 3, a short, rounded tail at the end of vein 2 and another slightly longer at the end of vein 1b, a small, weak lobe at the anal angle.

*Wing venation* (Text-fig. 309). Fore wing with 12 veins.

*Male genitalia* (Text-fig. 154). Uncus subrectangular, the distal margin rounded at the sides and with a slight median, obtuse protuberance ; subunci long and robust, strongly curved, tapering evenly to the apices ; tegumen oval, its proximal edge jutting out towards segment 8 ; *in situ* uncus and tegumen together are hood-shaped ; vinculum narrow, with a robust triangular saccus ; lower fultura crescentic ; valves oblong, subtriangular, with rounded, serrated apices, the edges of the upper processes folded over the inner surface and connected by a membrane which sheathes the penis, as in species of *Aphmaeus*, *Spindasis*, *Axiocerses*, etc. ; penis short and massive, swollen in its internal portion and with obliquely truncate apex ; vesica enclosing numerous long delicate spines ; uncus and distal portions of the valves clothed in fine, delicate hair.

The male genitalia of *sardonyx* and *argyraspis* are of the same type as those of *P. thero* although the saccus is less developed. The lower fultura is shield-shaped in *argyraspis* ; but composed of two long digitate processes in *sardonyx*.

The early stages of *P. thero* have been well studied by Gowan C. Clark, 1942, *J. ent. Soc. sth. Afr.* 5 : 111-115, pl. 3 ; the caterpillar feeds on *Rhus longisperma*, in association with the ants called "cocktailed ants".

LIST OF SPECIES OF *Phasis*

\**Phasis argyraspis* (Trimen), 1873.

*Phasis argyraspis* f. *labuschagnei* van Son, 1959, *Koedoe* 2 : 56.

*Phasis erosine* (Fabricius), see *thero*.

*Phasis pulsius* (Herbst), see *thero*.

*Phasis rumina* (Drury), see *thero*.

*Phasis salmoneus* (Cramer), see *thero*.

\**Phasis sardonyx* (Trimen), 1868.

*Phasis sardonyx* f. *peringueyi* Aurivillius, 1924 : 430.

*Phasis sardonyx* f. *knobeli* van Son, 1959, *Koedoe* 2 : 56.

\**Phasis thero thero* (Linne), 1764. Fig. Drury, 1773 (as *rumina*).

*rumina* (Drury), 1773 ; *salmoneus* (Cramer), 1781 ; *erosine* (Fabricius), 1787 ;

*pulsus* (Herbst), 1793.

*Phasis thero clavum* Murray, 1935 : 104, fig. (regarded by Swanepoel, 1953, as a distinct species).

Genus *ALOEIDES* Hübner

*Aloeides* Hübner, 1826, *Verz. bekannt. Schmett.* : 73. Type-species : *Papilio pierus* Cramer, 1779, selected by Scudder, 1875.

*Phasis* Hübner (partim) ; Aurivillius, 1898 : 337 ; 1924 : 424 ; Murray, 1935 : 113 ; Swanepoel, 1953 : 125.

*Head* rather broad ; eyes glabrous ; frons clothed with erect hair ; palpi long, second segment ascending, laterally compressed, clothed below with close-set long scales, third segment short and conical ; thorax robust, clothed below with close-set hair ; ♂ fore leg with tibia

shorter than femur, tarsus unsegmented and finely spinose below ; mid and hind legs with tibiae shorter than femora.

*Wing shape.* Fore wing with costa arched at the base, then straight, apex pointed, outer margin slightly convex ; hind wing oval, apex rounded, outer margin slightly scalloped at the ends of veins 2 and 3, a small rounded projection at the end of vein 1b. Wing shape is not uniform in the genus *Aloeides*. In *wallengreni* the anal angle is much more produced. On the other hand, in *barklyi* the hind margin of the hind wings is almost evenly rounded.

*Wing venation* (Text-fig. 310). Veins 6 and 7 of the fore wings arise from a short common stalk.

*Male genitalia* (Text-fig. 155). Uncus trapezoidal, distal margin feebly convex and forming the long base of the trapezoid ; subunci robust, bent near the base and tapering gradually to their apices ; the proximal edge of the tegumen forms a large rounded projection directed towards the eighth abdominal segment, *in situ* uncus and tegumen together are hood-shaped ;

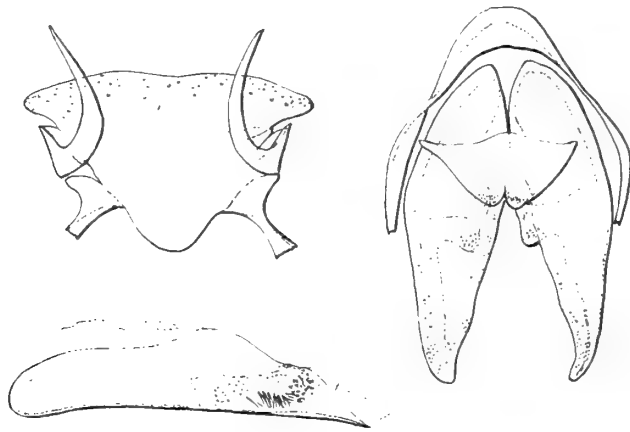


FIG. 155. *Aloeides pierus* (Cramer), ♂ genitalia.

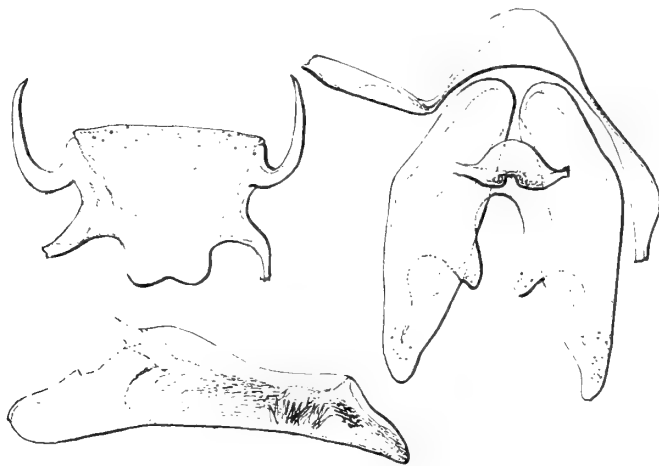


FIG. 156. *Aloeides thyra thyra* (Linnaeus), ♂ genitalia.

vinculum rather narrow, with a rounded saccus ; lower fultura a triangular plate with a shallow notch at the apex ; valves oblong with rounded apices, their upper processes folded over the inner surface, and connected by a membrane which passes over the penis ; penis robust, widely open dorsally in its internal portion, swollen in the middle and with obliquely truncate apex ; vesica enclosing small cornuti and delicate spines ; distal margins of uncus and valves sparsely pilose.

As in the type-species, *A. pierus*, the distal margin of the uncus is straight or feebly convex in *aranda*, *damarensis*, *molomo*, *orthrus* and *thyra* (Text-fig. 156). In *barklyi* it is very convex. On the other hand it is slightly concave in *taikosama* and *almeida*. In *wallengreni* (Text-fig. 157) the uncus is distinctly different in form, being subrectangular with a shallow depression on the distal margin, lateral angles rounded and sides straight, the subunci angled further from the base, equally thick throughout, instead of tapered and ending in a blunt tip. *A. malagrida* approaches *wallengreni* in the form of its uncus.

The larva of *A. pierus* has been described by Dickson (1945, *J. ent. Soc. sth. Afr.* 8 : 161). It lives on a species of *Aspalathus* (Leguminosae).

LIST OF SPECIES OF *Aloeides*

- Aloeides aglaspis* (Trimen), see *malagrida*.
- \**Aloeides almeida* (Felder), 1862. Fig. Felder, 1865, *Reise Novara*.
- \**Aloeides aranda aranda* (Wallengren), 1857. Fig. Aurivillius in Seitz, 1924.  
*mars* (Trimen), 1862 ; *pierus* var. *A.* Trimén, 1866.
- Aloeides aranda* f. *rougemonti* (Oberthür), 1910.
- Aloeides aranda zilka* Smith, 1900.
- \**Aloeides barklyi* (Trimen), 1874.
- \**Aloeides conradsi* (Aurivillius), 1907. Fig. Aurivillius in Seitz, 1924.

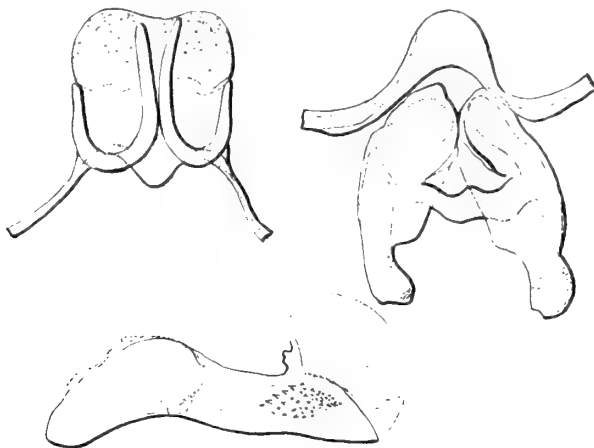


FIG. 157. *Aloeides wallengreni* (Trimen), ♂ genitalia.

- Aloeides conradsi* f. *ochraceus* (Joicey & Talbot), 1924, *Bull. Hill Mus. Witley* 1 : 546.
- \**Aloeides damarensis* (Trimen), 1891.  
*Aloeides damarensis* f. *punctata* (Aurivillius), 1924.  
*Aloeides euadrus* (Fabricius), ♂, see *pierus* ; ♀, see *thyra*.  
*Aloeides griseus* Riley, 1921, *Trans. ent. Soc. Lond.* 1921 : 251, fig.
- \**Aloeides malagrida* (Wallengren), 1854. Fig. Murray, 1935.  
*aglaspis* (Trimen), 1862.  
*Aloeides mars* (Trimen), see *aranda*.  
*Aloeides marshalli* (Aurivillius), 1924.
- \**Aloeides molomo molomo* (Trimen), 1870.  
*Aloeides molomo mumbuensis* Riley, 1921, *Trans. ent. Soc. Lond.* 1921 : 250, fig.
- Aloeides molomo kiellandi* Carcasson, 1961, *Occ. Pap. Coryndon meml Mus.* No. 7 : 19, fig.
- Aloeides nycetus* (Cramer), see *thyra*.
- \**Aloeides orthrus* (Trimen), 1874.
- \**Aloeides pierus* (Cramer), 1779.  
*euadrus* (Fabricius), 1787 (♂) ; *suetonius* (Fabricius), 1793.  
*Aloeides pierus* var. A Trimén, see *aranda*.  
*Aloeides pierus* var. B Trimén, see *taikosama*.  
*Aloeides simplex* (Trimén), 1893.  
*Aloeides suetoni* (Fabricius), see *pierus*.
- \**Aloeides taikosama* (Wallengren), 1857. Fig. Aurivillius in Seitz, 1924.  
*pierus* var. B Trimén, 1866.
- \**Aloeides thyra thyra* (Linnaeus), 1764. Fig. Hübner, *Samml. Exot. Schmett.* 1816-24.  
*nycetus* (Cramer), 1781 ; *euadrus* (Fabricius), 1787, ♀.
- Aloeides thyra* f. *egerides* (Riley), 1938, *Trans. R. ent. Soc. Lond.* 87 : 238.
- \**Aloeides thyra* f. *pallida* (Riley), 1938 : 238.
- \**Aloeides thyra dentatis* (Swiestra), 1909.  
*Aloeides thyra maseruna* (Riley), 1938, *Trans. R. ent. Soc. Lond.* 87 : 239, fig.
- \**Aloeides wallengreni* (Trimén), 1887. Fig. Trimén, 1866 (as *malagrida*).

### Genus *POECILMITIS* Butler

*Poecilmitis* Butler, 1899, *Entomologist* 32 : 78. Type-species : *Zeritis lycegenes* Trimén, by original designation.

*Phasis* Hübner (partim) ; Aurivillius, 1898 : 340 ; 1924 : 430 ; Murray, 1935 : 107 ; Swane-poel, 1953 : 135.

*Eyes* glabrous, palpi long, ascending, second segment very long, laterally compressed, clothed below with erect hair, third segment short, laterally compressed, apex blunt ; antennae about half the length of the costa, becoming gradually stouter right up to the poorly differentiated club ; ♂ fore leg with tibia shorter than femur, tarsus unsegmented, finely spinose below.



*Wing shape.* Fore wing, costa arched at the base, then straight, apex slightly rounded, outer margin convex ; hind wing oval, apex rounded, outer margin slightly scalloped at the endings of the veins.

The shape of the hind wing is not constant in the genus *Poecilmitis*. Whilst in *aethon*, *dicksoni*, and *pyroeis* it is approximately the same as in the type-species, there is a short broad tail at vein 1b in *chrysaor*, *palmus* and *felthami* which is more or less pronounced also in the *thysbe* group.

*Wing venation* (Text-fig. 311). Fore wing with 12 veins ; 6 and 7 from the upper angle of the cell.

*Male genitalia* (Text-fig. 158). Uncus roughly rectangular with broadly rounded angles and a shallow median depression in the distal margin ; subunci long, curved; robust, with a short apophysis on the lower edge of the curve, apex blunt ; tegumen oval ; vinculum rather narrow with a short rounded saccus ; lower fultura small, shield-shaped, notched apically ; valves oblong, with apex digitate, the upper processes connected on their inner surfaces by a thin membrane which surrounds the penis ; penis long ; curving, swollen at its base, apex obliquely truncate ; uncus and distal portion of valves sparsely pilose.

In *P. thysbe*, *P. palmus*, *P. felthami*, *P. chrysaor* and *P. aethon*, the subunci bear an apophysis as in *lycegenes*. This is lacking in *dicksoni*.

In *aethon* and *felthami* the saccus is rounded and not prominent, but in *thysbe*, *palmus* and *chrysaor* it is quadrangular and very prominent.

The early stages of *thysbe*, *palmus*, *chrysaor* and *pyroeis* have been described by Dickson 1943 (*J. ent. Soc. sth. Afr.* **6** : 37 ; 1944, **7** : 97 ; 1945, **8** : 99 ; 1947, **9** : 178, **10** : 128 ; 1948, **11** : 50).

LIST OF SPECIES OF *Poecilmitis*

- Poecilmitis adonis* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 277, fig.
- \**Poecilmitis aethon* (Trimen), 1887.
- Poecilmitis aridus* Pennington, 1953, *J. ent. Soc. sth. Afr.* **16** : 104, fig.
- Poecilmitis atlantica* Dickson, 1966, *Entomologist's Rec. J. Var.* **78** : 181, fig.
- Poecilmitis beaufortia* Dickson, 1966, l.c., **78** : 109, fig.
- \**Poecilmitis chrysaor* (Trimen), 1864. Fig. Trimen, 1887.

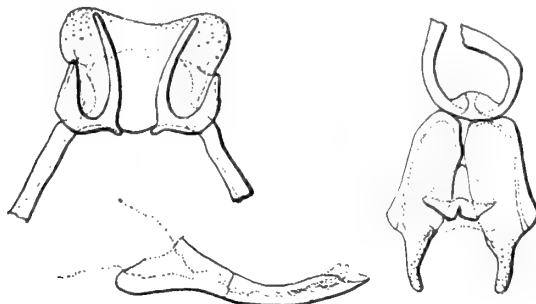


FIG. 158. *Poecilmitis lycegenes* (Trimen), ♂ genitalia.

- \**Poecilmitis dicksoni* (Gabriel), 1947, *Entomologist* **80** : 60.  
*Poecilmitis endymion* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 274, fig.  
 \**Poecilmitis felthami* (Trimen), 1904.  
 \**Poecilmitis lycegenes* (Trimen), 1874.  
*Poecilmitis lycia* Riley, 1938, *Trans. R. ent. Soc. Lond.* **87** : 242, fig.  
*Poecilmitis lyncurium* (Trimen), 1868. Fig. Trimen, 1887.  
*Poecilmitis lysander* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 275, fig.  
*Poecilmitis midas* Pennington, 1962 : 272, fig.  
*Poecilmitis nais* (Cramer), see *thysbe*.  
 \**Poecilmitis nigricans* (Aurivillius), 1924. Fig. Murray, 1935.  
 \**Poecilmitis palmus* (Cramer), 1781.  
*Poecilmitis pan* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 273, fig.  
*Poecilmitis pelion* Pennington, 1953, *J. ent. Soc. sth. Afr.* **16** : 106, fig.  
*Poecilmitis penningtoni* Riley, 1938, *Trans. R. ent. Soc. Lond.* **87** : 239, fig.  
*Poecilmitis phosphor* (Trimen), 1864. Fig. Trimen, 1866.  
*Poecilmitis pyramus* Pennington, 1953, *J. ent. Soc. sth. Afr.* **16** : 105, fig.  
*Poecilmitis pyroeis* (Trimen), 1864. Fig. Trimen, 1866.  
*Poecilmitis splendens* (Swainson), see *thysbe*.  
*Poecilmitis swanepoeli* Dickson, 1965, *J. ent. Soc. sth. Afr.* **27** : 160, figs.  
 \**Poecilmitis thysbe thysbe* (Linn.), 1764. Fig. Butler, 1868.  
*nais* (Cramer), 1775 ; *splendens* (Swainson), 1833.  
 \**Poecilmitis thysbe osbecki* (Aurivillius), 1882. Fig. genitalia, Stempffer, 1945, *Ann. Soc. ent. Fr.* : 82.  
*Poecilmitis thysbe brooksi* Riley, 1938, *Trans. R. ent. Soc.*, **87** : 241, fig.  
*Poecilmitis thysbe trimeni* Riley, 1938 : 240, fig.  
*Poecilmitis turneri* Riley, 1938 : 241, fig.  
*Poecilmitis uranus* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 277, fig.

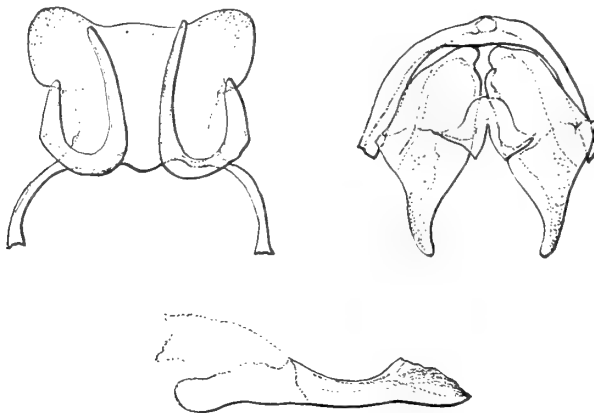


FIG. 159. *Chrysoritis oreas* (Trimen), ♂ genitalia.

Genus *CHRYSORITIS* Butler

*Chryсорitis* Butler, 1898, *Proc. zool. Soc. Lond.* **1897** : 848. Type-species : *Zeritis oreas* Trimen, by original designation.

*Phasis* Hübner (partim) ; Aurivillius, 1898 : 340 ; 1924 : 431 ; Murray, 1935 : 107, 113, 116 ; Swanepoel, 1953 : 127, 144, 146.

*Eyes* glabrous ; vertex clothed with long brown erect hair ; palpi long, second segment extending well beyond the frons, clothed above with adpressed scales and below with long white hair, third segment very short with blunt tip ; antennae about half the length of the costa, becoming gradually stouter right up to the poorly differentiated club, which is elongate and bright orange beneath ; thorax robust, clothed below with white hair ; ♂ fore leg, femur flattened, tibia shorter than femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing costa almost straight, apex somewhat rounded, outer margin strongly convex, hind wing with a small rounded projection at the end of vein 1b.

*Wing venation* (Text-fig. 312). Fore wing with 11 or 12 veins.

In his description of *Poecilmitis*, Butler stated that *oreas* has only 11 veins in the fore wing. This assertion is repeated by Aurivillius (1924 : 429) ; it is, however, incorrect. A close examination reveals that vein 8 is present, though short and not very apparent ; on the other hand vein 8 is lacking in *zeuxo* and *chryсantas*, which in consequence have only 11 veins in the fore wing. It is quite possible that vein 8 was absent in the specimen examined by Butler, the character being a variable one.

*Male genitalia* (Text-fig. 159). Uncus subrectangular, the distal edge slightly depressed in the middle, lateral angles broadly rounded ; subunci long, robust, bent at about two-fifths of their length from the base, devoid of apophyses, apex blunt, tegumen subrectangular, *in situ* uncus and tegumen together hood-shaped ; vinculum narrow, no saccus, lower fultura shield-shaped with a deep apical notch ; valves oblong with rounded apices, their upper processes connected by a membrane which surrounds the penis, as is the case throughout the *Phasis* group ; penis elongate, swollen in the middle, the external portion dilated just before the obliquely truncated apex ; uncus and distal parts of the valves pilose.

The male genitalia of *zeuxo* and *chryсantas* are of the same type as those of *oreas*, but the distal margin of the uncus, instead of being concave, bears a weak median prominence, the subunci have an apophysis and the saccus is quadrangular and very prominent.

The early stages of *C. zeuxo* have been described by Dickson (1952, *Trans. R. Soc. S. Afr.* **23** : 447, fig.).

The two genera, *Poecilmitis* and *Chryсорitis*, are not sharply defined. The type-species of *Chryсорitis* (*oreas*) has 12 veins in the fore wing, like *Poecilmitis*. The two genera could well be united.

LIST OF SPECIES OF *Chryсорitis*

\**Chryсорitis chryсantas* (Trimen), 1868.

\**Chryсорitis oreas* (Trimen), 1891. Fig. Trimen, 1906.

\**Chryсорitis zeuxo zeuxo* (Linnaeus), 1764. Fig. Trimen, 1866.

*Chryсорitis zeuxo zonarius* (Riley), 1938, *Trans. R. ent. Soc. Lond.* **87** : 239, fig.

Genus *CRUDARIA* Wallengren

*Crudaria* Wallengren, 1875, *Öfvers K. svenska Vetensk.Akad. Förh.* **32** : 86 ; Aurivillius, 1924 : 431 ; Swanepoel, 1953 : 149. Type-species : *Arhopala leroma* Wallengren, by monotypy. *Phasis* Hübner (partim) ; Aurivillius, 1898 : 343 ; Murray, 1935 : 106.

*Head* rather broad ; eyes glabrous, palpi long, ascending, second segment laterally compressed, clothed with long scales and hair, third segment long, slender, acuminate ; antennae slightly more than half the length of the costa, becoming gradually stouter up to the poorly differentiated fusiform club ; thorax rather robust, thickly clothed below with white hair ; ♂ fore leg with tibia shorter than femur, tarsus rather slender, unsegmented, finely spinose below ; mid and hind legs with tibiae shorter than femora.

*Wing shape.* Fore wing with costa arched at its base then straight, apex angular, outer margin convex between apex and vein 4, then straight ; hind wing oval, outer margin rounded, a short delicate tail at the end of vein 1b a small lobe at the anal angle.

*Wing venation* (Text-fig. 313). Fore wing with 11 veins ; hind wing cell short.

*Male genitalia* (Text-fig. 160). Uncus composed of two large semicircular lobes separated by the rounded depression on the distal edge of the tegumen ; subunci much reduced, curved, apex blunt, with a short rounded apophysis on the lower margin, tegumen large ; vinculum fairly broad with a rounded saccus ; lower fultura consists of a triangular plate with deeply notched base ; valves oblong with digitate apices, their upper margins connected in the middle by a membrane ; penis elongate, robust, swollen at the base, apex obliquely truncate ; uncus and apices of valves clothed with long, fine hair.

The early stages of *Crudaria leroma* have been described by Gowan Clarke (1958, *J. ent. Soc. sth. Afr.* **24** : 127).

LIST OF SPECIES OF *Crudaria*

*Crudaria capensis* van Son, 1956, *Ann. Transv. Mus.* **22** : 505.

*Crudaria delagoensis* (E. Sharpe), see *leroma*.

\**Crudaria leroma leroma* (Wallengren), 1857. Fig. Trimen, 1870.

*zorites* (Hewitson), 1874 ; *delagoensis* (E. Sharpe), 1891.

*Crudaria leroma albomaculate* Aurivillius, 1924 : 432.

*Crudaria zorites* (Hewitson), see *leroma*.

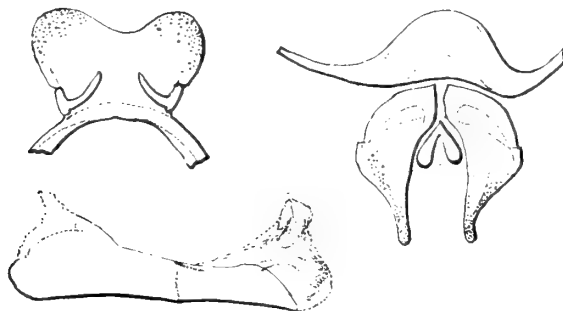


FIG. 160. *Crudaria leroma leroma* (Wallengren), ♂ genitalia.

Genus **ERIKSSONIA** Trimen

*Erikssonina* Trimen, 1891, *Proc. zool. Soc. Lond.* **1891** : 91 ; Aurivillius, 1898 : 343 ; 1924 : 432.  
 Type-species : *Erikssonina acraeina* Trimen, by monotypy.

*Head* small, downy ; eyes glabrous ; palpi long, parallel, horizontal, second segment laterally compressed, clothed below with long white scales, third segment long, acuminate ; antennae rather short, thick, with a blunt ill-defined club ; thorax short and slender ; ♂ fore leg, tibia with a strong apical spur, tarsus longer than the tibia, unsegmented, ending in a long sharp pointed claw ; mid and hind legs, tibiae with a short spur, metatarsi longer than the tibiae, terminal claws large and strong.

*Wing shape.* Fore wing with costa weakly arched at the base then straight, outer margin convex ; hind wing oval, apex rounded, outer margin slightly scalloped at the ends of veins 3 and 2, an obtuse projection at the end of vein 1b.

*Wing venation* (Text-fig. 314). Fore wing with 12 veins.

*Male genitalia* (Text-fig. 161). Uncus crescent-shaped ; subunci long, curved, robust at the base then slender to the blunt apex ; tegumen with convex proximal edge ; uncus and tegumen together hood-shaped ; vinculum rather narrow with a weak rounded saccus ; lower fulcrum shield-shaped with a deep notch in the upper edge ; valves oblong with rounded apices, their upper processes connected together by a membrane which surrounds the penis ; penis swollen at its base, apex obliquely truncate ; vesica armed with large cornuti ; uncus and apices of valves sparsely pilose.

The male genitalia of *E. cooksoni* are of the same type as those of *E. acraeina*.

In his generic description Trimen wrote "*Erikssonina* exhibits considerable divergence from the typical groups of the family and is probably best placed between *Zeritis* and *Mimacraea*, but nearer to the former than the latter". It is true that *Erikssonina* belongs to the same subfamily as *Zeritis*, *Axiocerses*, *Phasis* etc. but on the other hand it has no affinity whatever with *Mimacraea*. Trimen mentions that *E. acraeina* bears a superficial resemblance to certain species of *Acraea*, e.g. to *Acraea buxtoni* on the upperside and to *A. axina* and *A. atergatis* on the underside. He attributes this resemblance to mimicry.

LIST OF SPECIES OF *Erikssonina*

\**Erikssonina acraeina* Trimen, 1891.

\**Erikssonina cooksoni* H. H. Druce, 1905.

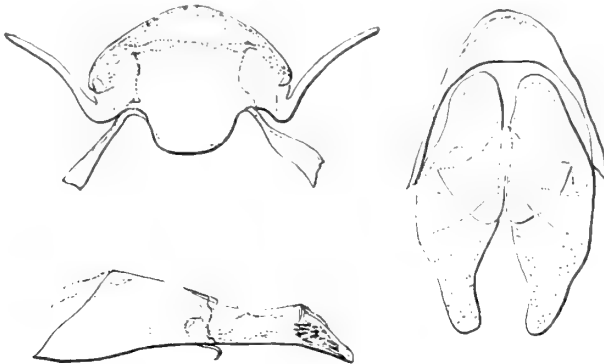


FIG. 161. *Erikssonina acraeina* Trimen, ♂ genitalia.

Genus *THESTOR* Hübner

*Thestor* Hübner, 1823, *Verz. bek. Schmett.* (5) : 73 ; Swanepoel, 1953 : 149. Type-species : *Papilio petalus* Cramer, 1779 (*Papilio protumnus* Linnaeus, 1764), designated by Scudder (1875, *Proc. Am. Acad. Arts Sci.* **10** : 281).

*Arrugia* Wallengren, 1872, *Öfvers. K. svenska VetenskAkad. Förh.* **29** : 47 ; Aurivillius, 1898 : 343 ; 1924 : 433 ; Murray, 1933 : 99.

*Head* small ; eyes glabrous ; palpi long, extending far beyond the frons, second segment clothed below with white adpressed scales, third segment with a blunt apex, palpi longer in ♀ than in ♂ ; antennae very short, thick shaft gradually increasing in thickness from the base to the undifferentiated club, which has a rounded apex ; thorax robust ; abdomen long and thick, especially in the ♀ ; legs short, scaly, tibiae much shorter than femora and without apical spurs ; ♂ fore tarsus distinctly five-segmented like that of the female, and with two curved terminal claws.

*Wing-shape.* Fore wing costa straight, apex slightly rounded, outer margin slightly convex, inner margin straight and much shorter than the costa ; hind wing oval, outer margin convex, anal angle very rounded. In their massive build and dull brown and black colours, the species of *Thestor* have more the appearance of Hesperiiidae than Lycaenidae.

*Wing venation* (Text-fig. 315). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 162). Uncus a narrow band whose distal edge bears in the middle two very long recurved processes, each with a sharp pointed apex ; subunci long, curved, rather slender ; tegumen subrectangular ; vinculum narrow with a saccus ; above the penis are two subtriangular processes which have a blunt and slightly serrate apex, and are connected by a membrane both to the dorsal section of the vinculum and to the middle of the dorsal edge of the valves [Van Son, in his paper on some species of *Thestor* (1957, *Ann. Transv. Mus.* **21** : 442, fig.) gave these processes the name of "Labiles". I believe that they correspond to the upper fultura] ; lower fultura crescentic, fused to the base of valves, valves oblong, distal portion widened, with an almost straight terminal edge ; penis elongate, robust at the base, curved, tapering gradually in its external portion, vesica clothed with numerous cornuti which give it a shagreened appearance ; uncus almost glabrous, distal portion of valves pilose.

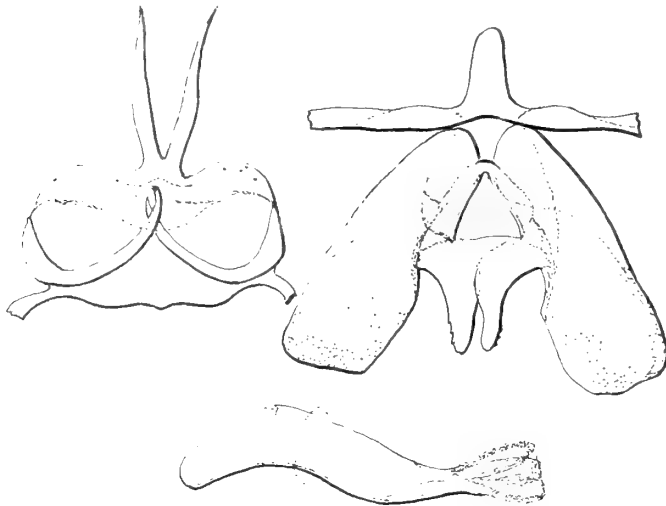


FIG. 162. *Thestor protumnus protumnus* (Linnaeus), ♂ genitalia.

I have examined the male genitalia of *Thestor brachycora*, *T. obscurus*, *T. holmesi* and *T. strutti*. Bethune Baker (1914, *Trans. ent. Soc. Lond.* **1914** : 333) described and figured those of *T. basuta*. van Son (1949, *Ann. Transv. Mus.* **21** : 215) dealt with *T. penningtoni* and the same author (1951, *Ann. Transv. Mus.* **21** : 440) described those of *dukei*, *obscurus*, *holmesi*, *penningtoni* and *strutti*. Pennington (1962, *J. ent. Soc. sth. Afr.* **25** : 281) figured the male genitalia of *vansoni*, *petra*, *tempe*, *rileyi* and *obscurus*. A comparison of these works shows clearly that all the species examined belong to the same type as *T. protumnus*, the type-species of the genus. The genus *Thestor* seems to be at the same time both very specialized and very homogeneous.

Bethune Baker (1914, *Trans. ent. Soc. Lond.* **1914** : 333) found some resemblance between the dorsal elements of *T. basuto* and of *Mimacraea*. I do not believe, however, that there is any affinity between these two genera. The uncus in *Mimacraea* is asymmetrical ; in *Thestor* it is not. In *Mimacraea* the tegumen is extremely reduced and subunci are absent ; they are well developed in *Thestor*. The only resemblance lies in the two long curved and pointed processes of the uncus, which are a quite spectacular character, but not one to which any considerable taxonomic importance should, in my opinion, be attributed, since it recurs in various degrees of development in several other widely separated groups, for example in *Myrina ficedula* and certain species of palaeartic Theclinae such as *icana*, *butleri* and *attilia*.

The early stages of *E. protumnus*, *E. basuta*, *E. brachycera* and *E. obscurus* have been described by Murray (1935 : 99), Dickson (1945, *J. ent. Soc. sth. Afr.* **8** : 151) and, in the same journal, by Clark (1960, **23** : 279, 282).

LIST OF SPECIES OF *Thestor*

- Thestor basuta* (Wallengren), 1857. Fig. Trimen, 1887.
- zaraces* (Hewitson), 1874.
- \**Thestor brachycera* (Trimen), 1883. Fig. Trimen, 1887.
- Thestor braunsi* van Son, 1941, *J. ent. Soc. sth. Afr.* **4** : 186.
- Thestor dicksoni dicksoni* Riley, 1954, *Entomologist* **87** : 98, fig.
- Thestor dicksoni calviniae* Riley, 1954 : 101, fig.
- Thestor dukei* van Son, 1951, *Ann. Transv. Mus.* **21** : 439, fig.
- \**Thestor holmesi* van Son, 1951 : 441, fig.
- Thestor montanus montanus* van Son, 1941, *J. ent. Soc. sth. Afr.* **4** : 191.
- Thestor montanus pictus* van Son, 1941 : 192.
- Thestor murrayi* Swanepoel, 1953, *J. ent. Soc. sth. Afr.* **16** : 191, fig.
- \**Thestor obscurus* van Son, 1941, *J. ent. Soc. sth. Afr.* **4** : 186.
- Thestor penningtoni* van Son, 1949, *Ann. Transv. Mus.* **21** : 214, fig.
- Thestor petalus* (Cramer), see *protumnus*.
- Thestor petra* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 280, fig.
- \**Thestor protumnus protumnus* (Linnaeus), 1764. Fig. Cramer, 1779 (as *petalus*).
- petalus* (Cramer), 1779 ; *silvius* (Fabricius), 1787.

*Thestor protumnus aridus* van Son, 1941, *J. ent. Soc. sth. Afr.* **4** : 188.

*Thestor rileyi* Pennington, 1956, *J. ent. Soc. sth. Afr.* **19** : 33, fig.

*Thestor silvius* (Fabricius), see *protumnus*.

\**Thestor strutti* van Son, 1951, *Ann. Transv. Mus.* **21** : 444, fig.

*Thestor tempe* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 282, fig.

*Thestor vansoni* Pennington, 1962 : 278, fig.

*Thestor zaraces* (Hewitson), see *basuta*.

### Genus *SPALGIS* Moore

*Spalgis* Moore, 1879, *Proc. zool. Soc. Lond.* **1879** : 137 ; Aurivillius, 1898 : 344 ; 1924 : 433.

Type-species : *Lucia epeus* Westwood 1851 (an Indo-Malayan species) by monotypy.

*Eyes* glabrous ; palpi long, second segment laterally much compressed, extending well beyond the frons, third segment short, also laterally compressed, with pointed apex ; antennae less than half the length of the costa, thickening gradually to an ovoid club which is not clearly differentiated from the shaft ; thorax moderately robust ; abdomen long, reaching slightly beyond the anal angle of the wing ; ♂ fore leg with tibia shorter than femur, tarsus unsegmented, finely spinose below ; mid and hind tibiae slightly shorter than the femora.

*Wing shape.* Fore wing with costa arched at its base, then straight, apex angular, outer margin slightly convex ; hind wing subtriangular, costa arched, apex rounded, outer margin slightly convex, anal angle well marked.

*Wing venation* (Text-fig. 376). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 163). Uncus pentagonal with an obtuse median projection on the terminal edge, the angles rounded ; subunci short with very robust bases, curving, the free portion tapering gradually to a pointed apex ; tegumen subrectangular, *in situ* uncus and tegumen are hood-shaped ; vinculum moderately wide, without saccus ; lower fultura composed of two long digitate processes, swollen at their bases, their blunt apices level with the apices of the valves ; valves oblong with a small tooth at the apex, distally connected by a membrane ; penis very elongate, slender, slightly curved, uncus clothed with short hair, longer hair on the apices of the valves.

The armature of *S. lemolea* resembles that of *S. epeus* ; in *S. tintinga* the subunci are less massive basally, evenly curved, and taper progressively to a sharp-pointed tip.

The caterpillar of *S. lemolea* has been described by W. A. Lamborn (1911, *Proc. ent. Soc. Lond.* **1911** : 105, and 1913, *Trans. ent. Soc. Lond.* **1913** : 475) and also by



FIG. 163. *Spalgis epius* (Westwood), ♂ genitalia.



T. H. E. Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 220). It feeds on Coccidae of the genus *Dactylopius*.

LIST OF SPECIES OF *Spalgis*

- Spalgis docus* (Druce), see *tintinga*.  
*Spalgis latimarginata* E. Sharpe, see *lemolea*.  
 \**Spalgis lemolea* H. H. Druce, 1890. Fig. Aurivillius in Seitz, 1924.  
*latimarginata* E. Sharpe, Oct. 1890 ; *s-signata* Holland, Nov. 1890.  
*Spalgis pilos* H. H. Druce, 1890.  
*Spalgis s-signata* Holland, see *lemolea*.  
 \**Spalgis tintinga* (Boisduval), 1833. Fig. Mabilie, 1887.  
*docus* (Druce), 1875.

Genus **CUPIDESTHES** Aurivillius

*Cupidesthes* Aurivillius, 1895, *Ent. Tidskr.* **16** : 215 ; 1898 : 345 ; 1924 : 435 ; Bethune Baker, 1910 : 7. Type-species : *Cupidesthes robusta* Aurivillius, by monotypy.

*Frons* black with two white lateral lines ; eyes glabrous or sparsely pilose ; palpi long, ascending, second segment laterally compressed, clothed below with white adpressed scales, third segment slender, acuminate ; antennae slender, a little longer than half the length of the costa, club ovoid, well differentiated ; thorax more robust than in *Anthene*, clothed below with long white hair ; ♂ fore leg, femur clothed with white hair, tibia shorter than the femur, tarsus long, unsegmented.

*Wing shape.* Fore wing triangular, costa almost straight, outer margin slightly convex ; hind wing abdominal margin slightly concave before the anal angle.

*Wing venation* (Text-fig. 317). Fore wing with 11 veins ; 10 and 11 free from the upper edge of the cell.

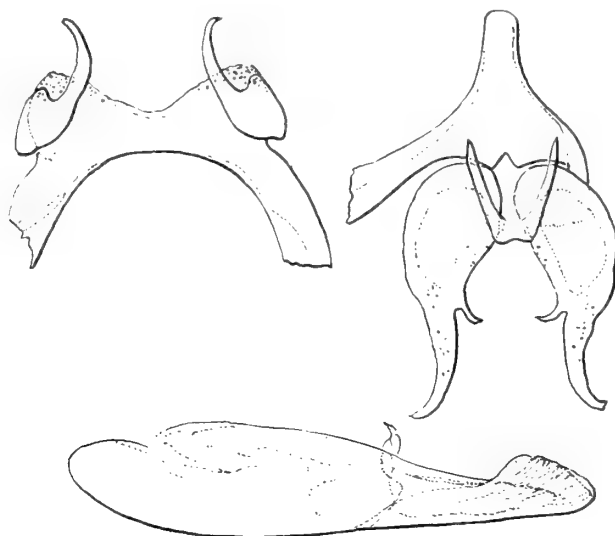


FIG. 164. *Cupidesthes robusta* Aurivillius, ♂ genitalia.

*Male genitalia* (Text-fig. 164). Uncus composed of two small lobes fused to either side of the tegumen ; subunci short and robust, bent close to their massive bases ; tegumen a rather wide ribbon ; vinculum continuing as a long robust saccus ; lower fultura shaped like a furca, with straight divergent arms ; valves elongate, oval in their basal halves, tapered and slightly recurved in their distal halves ; penis very robust, the internal portion almost ovoid, the external portion rather short, tapering, dilated at the apex ; uncus and distal portions of the valves sparsely pilose.

The male genitalia of the other species of *Cupidesthes* differ in varying degree from those of *C. robusta*, not in general plan, but in the relative dimensions and shapes of the parts.

In *Cupidesthes arescopa* (Text-fig. 165) the subunci are extremely long and slender, the tegumen is reduced to a narrow ribbon in the median area, the valves are digitate and little swollen basally, and the penis is very long, tapering and dilated apically.

The genitalia of *C. voltae*, *C. thyraxis*, *C. lithas* and *C. paralithas* are rather like those of *C. arescopa*, although the subunci are shorter in *thyraxis* and the valves are not so tapered in the other species.

Bethune Baker did not examine the genitalia of *robusta*, but only those of *voltae*, *thyraxis*, *lithas* and *arescopa*, which explains his statement (l.c. : 5) that " the genitalia are also very different from those of the following genera, the clasps being of a totally different structure as will be seen from the descriptions of these organs ".

Other species of *Cupidesthes* present intermediate characters. In *C. irumu* the valves are digitate, very narrow, the penis slender, but the subunci are only moderately long and the posterior margin of the tegumen is deeply excavate. In *C. cuprifascia* the subunci are very long, the penis slender, but the valves are rather short and moderately wide. In *C. leonina* the subunci are only of moderate length, the penis less long than in the foregoing species, the valves rather broad with a deeply cleft apex and the upper process ends in a long sharp point.

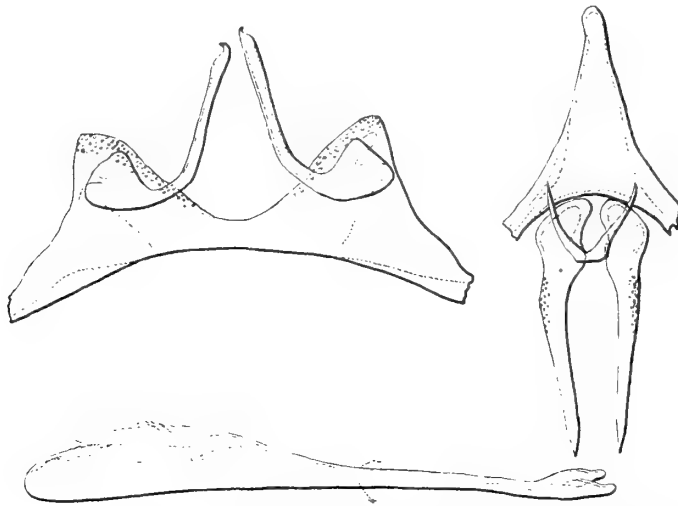


FIG. 165. *Cupidesthes arescopa arescopa* Bethune Baker, ♂ genitalia.

*C. wilsoni* (Text-fig. 166) differs again : posterior margin of tegumen deeply excavate on the median line, subunci fairly long, robust, bent, basally massive, vinculum rather broad, with a tapering saccus, lower fultura with small divergent branches ; valves oval with rounded apex, the upper process with very convex dorsal margin, the lower process almost straight and bearing a fine sharp tooth at three-fifths its length from base ; penis long and rather slender, slightly curved ; its faintly expanded tip obliquely truncate.

It is evident that in *Cupidesthes* there are patterns of male genitalia intermediate between those that Bethune Baker considered typical of the genus (*arescoba*, *thyrsis*, etc.) and those of the large genus *Anthene*. Again, it is to be noted that, if on the one hand *robusta*, *voltae*, *arescoba* and *wilsoni* are large robust insects, on the other hand other species, such as *thyrsis*, *leonina*, and *irumu* have the stature and structure of most species of *Anthene*. The "genus" *Cupidesthes* seems but feebly differentiated and might well be reduced to the rank of a subgenus.

The larva of *C. wilsoni* has been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 220). It lives in ants' nests in hollow trees of *Acacia abyssinica* and *Entada abyssinica* (Mimosaceae).

LIST OF SPECIES OF *Cupidesthes*

*Cupidesthes albida* (Aurivillius), 1923, *Ergebn. 2te D. Zent. Afr. Exp.* 1910-11, **1** : 1232.

\**Cupidesthes arescoba arescoba* Bethune Baker, 1910, fig. and fig. genitalia.

\**Cupidesthes arescoba orientalis* Stempffer, 1962 : 1169, fig.

*Cupidesthes brunneus* (Smith & Kirby), see *paludicola*.

\**Cupidesthes caerulea* Jackson, 1965, *Ann. Mag. nat. Hist.* (13) **8** : 531, figs.

\**Cupidesthes cuprifascia* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 95 (♂).

Fig. genitalia, Stempffer, 1950 *Revue fr. Ent.* **17** : 141. Fig. ♀, Stempffer **24** : 1170.



FIG. 166. *Cupidesthes wilsoni* Talbot, ♂ genitalia.

- Cupidesthes hilarion* Hulstaert, 1924, *Revue zool. afr.* **12** : 129.
- \**Cupidesthes irumu* Stempffer, 1948, *Revue fr. Ent.* **15** : 192, fig. genitalia.
- \**Cupidesthes leonina* (Bethune Baker), 1903.
- \**Cupidesthes lithas* (H. H. Druce), 1890. Fig. genitalia, Bethune Baker, 1910.
- Cupidesthes mimetica* (H. H. Druce), 1910.
- Cupidesthes minor* Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 95, fig.
- Cupidesthes paludicola* (Holland), 1891.  
*brunneus* (Smith & Kirby), 1893, fig.
- \**Cupidesthes paralithas* Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 399.
- \**Cupidesthes robusta* Aurivillius, 1895. Fig. Bethune Baker, 1910. Fig. genitalia, Stempffer, 1945, *Annls Soc. ent. Fr.* **94** : 83.
- \**Cupidesthes thyrsis* (Hewitson), 1878. Fig. genitalia, Bethune Baker, 1910.
- Cupidesthes thyrsis* ♀-f. *unicolor* (Aurivillius), 1924.
- Cupidesthes vidua* Talbot, 1929, *Bull. Hill Mus. Witley* **3** : 140, fig.
- \**Cupidesthes voltae voltae* (E. Sharpe), 1890. Fig. and fig. genitalia, Bethune Baker, 1910.
- Cupidesthes voltae gabunica* (Aurivillius), 1899.
- \**Cupidesthes wilsoni* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 121, fig. (♀) ; 1937, *Trans. R. ent. Soc. Lond.* **86** : 67, fig. (♂).
- Cupidesthes ysobelae* Jackson, 1965, l.c. : 530, fig.

### Genus *ANTHENE* Doubleday

*Anthene* Doubleday, 1847, *List Lep. Ins. B.M.* **2** : 27 ; Pinhey, 1949 : 108 ; Swanepoel, 1953 : 116. Type-species : *Papilio larydas* Cramer, designated by Hemming (1935, *Trans. R. ent. Soc. Lond.* **1935** : 435).

*Lycaenesthes* Moore, 1866, *Proc. zool. Soc. Lond.* **1865** : 773 (partim) ; Aurivillius, 1898 : 345, 353 ; 1924 : 435-456 ; Bethune Baker, 1910 : 14, 64 ; Murray, 1935 : 131, 138.

*Pseudoliptena* (partim) ; Stempffer, 1946 (see *Liptena* synonymy).

*Eyes* clothed in short but dense hair ; palpi long, ascending, extending far beyond the frons, second segment laterally compressed, third segment long, slender, acuminate ; antennae slender, more than half the length of the costa, with a well differentiated fusiform club ; thorax and abdomen robust ; ♂ fore leg, femur velvety, tibia shorter than the femur, tarsus unsegmented, finely spinose below ; mid and hind legs, femora velvety, tibiae shorter than the femora, tibiae with two spurs.

*Wing shape.* Fore wing with costa evenly curved, apex pointed, outer margin slightly convex ; hind wing oval, apex very slightly angled, outer margin evenly rounded from vein 6 to 1b, three tufts of short hairs at the ends of vein 3, 2 and 1b respectively.

*Wing venation* (Text-fig. 318). Fore wing with 11 veins, 10 and 11 free from upper edge of cell.

*Male genitalia* (Text-fig. 167). Uncus composed of two small lobes closely fused to the posterior edge of the tegumen on either side of the median depression ; subunci rather short, robust, bent almost at their base and tapering gradually to the apex, tegumen rather large, hood-shaped, vinculum broad with an inconspicuous saccus ; lower fultura (furca) with two wide lanceolate arms ; valves oblong with rounded apices, bearing, at about three-fifths of their length, a long digitate sclerite which ends level with the apex of the valve ; penis robust, very wide in its internal portion, abruptly narrowed in its external portion and ending in a point, uncus clothed with long thick hair, valves almost bare except just at the apices.

The genus *Anthene* is very numerous in species, and it is one of those of which the male genitalia have been much studied. In his revision of the African *Lycaenesthes*, Bethune Baker (1910) figured and described those of nearly all the species known at that time. Unfortunately not all his figures show the same aspect, which renders comparison often rather difficult. Since 1936 I have myself published in a variety of papers both figures and descriptions of a number of species. There is no point in republishing them here, but references to them will be found in the list of species which follows. Comparison of these figures brings to light in nearly every case good specific characters, and also a perfect uniformity of type. The median indentation of the posterior margin of the tegumen varies in abruptness and depth, the curvature of the subunci and their thickness vary, and the outline of the valves is more or less incised, but the structural plan remains constant in all the species. *Anthene* is, in fact, a very homogeneous genus.

The early stages of several species have been described by various authors :—

*A. liodes*, *A. lacheres* and *A. sylvanus* by Lamborn, 1913, *Trans. ent. Soc. Lond.* **1913** : 476.

*A. rubricinctus* by Farquharson, 1921 : 381.

*A. amarah* and *A. definita* by Murray, 1935 : 132 and by Pinhey, 1949 : 109.

*A. ligures*, *A. definita*, *A. otacilia kikuyu*, *A. pitmani*, *A. lunulata*, *A. princeps ugandae*, *A. livida*, *A. levis grisea*, *A. amarah*, *A. larydas* and *A. crawshayi* by Jackson, 1937, *Trans. R. ent. Soc. Lond.* **86** : 221, and Pinhey, 1949 : 110.

*A. definita* by Dickson, 1944, *J. ent. Soc. sthn Afr.* **7** : 97.

The larvae of several species live in company with ants of the genera *Camponotus*, *Crematogaster* and *Pheidole*.

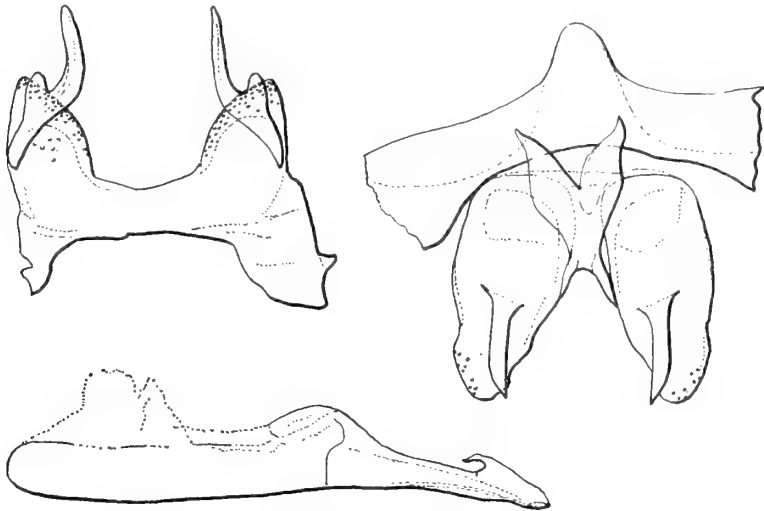


FIG. 167. *Anthene larydas larydas* (Cramer), ♂ genitalia.

LIST OF SPECIES OF *Anthene*

As the genus *Anthene* has not been the subject of any comprehensive revision since 1910, it is probable the following list, which has been prepared with the help of suggestions by Mr. G. E. Tite, contains a certain amount of hidden synonymy.

- Anthene abruptus* (Gaede), 1915. Possibly a mere aberration of *larydas* Cramer.  
*Anthene adherbal* (Mabille), see *liodes*.
- \**Anthene afra* (Bethune Baker), 1910.  
*lysias* (Hulstaert), 1924.
- \**Anthene alberta* (Bethune Baker), 1910. Fig. genitalia, Stempffer, 1944, *Revue fr. Ent.* **10** : 50.
- \**Anthene amarah amarah* (Guerin), 1847. Fig. genitalia, Bethune Baker, 1910.  
*olympusa* (Walker), 1870.  
*Anthene amarah orphna* Clench, 1965, *Butt. Liberia* : 369, figs.  
*Anthene arnoldi* Jones, 1919, *Proc. Trans. Rhod. scient. Ass.* **16** : 19.  
*Anthene aurea* (Bethune Baker), 1910.  
*Anthene bakeri* (H. H. Druce), 1910.  
*ja* (H. H. Druce MS).
- \**Anthena barnesi* Stevenson, 1940, *J. ent. Soc. sth. Afr.* **3** : 106, fig.  
*Anthene bihe* (Bethune Baker), 1910, see *liodes bihe*.
- \**Anthene bipuncta* (Joicey & Talbot), 1921, *Bull. Hill Mus. Witley* **1** : 96, fig.
- \**Anthene bitje* (H. H. Druce), 1910. Fig. genitalia, Stempffer, 1944, *Revue fr. Ent.* **10** : 56.  
*Anthene buchholzi* (Plötz), 1880.
- \**Anthene butleri butleri* (Oberthur), 1880.
- \**Anthene butleri arabicus* Gabriel, 1954, *Exp. S.W. Arabia*, 1937-38 : 379.
- \**Anthene butleri aureobrunnea* (Ungemach), 1932, *Mem. Soc. Sci. nat. phys. Maroc.* **32** : 85. Fig. genitalia, Stempffer, 1936, *Revue fr. Ent.* **3** : 138.
- \**Anthene butleri galla* Stempffer, 1947, *Bull. Soc. ent. Fr.* **52** : 38.
- \**Anthene butleri livida* (Trimen), 1881. Fig. Trimen, 1887. Fig. genitalia, Bethune Baker, 1910.
- \**Anthene butleri stempfferi* Storace, 1954, *Annali Mus. civ. Stor. nat. Genova* **66** : 321.  
*Anthene chirinda* (Bethune Baker), 1910.
- \**Anthene contrastata contrastata* (Ungemach), 1932, *Mem. Soc. Sci. nat. phys. Maroc* **32** : 86. Fig. genitalia, Stempffer, 1936, *Revue fr. Ent.* **3** : 137.  
*otacilia mashuna* (Stevenson), 1937.
- \**Anthene contrastata turkana* Stempffer, 1936, *Revue fr. Ent.* **3** : 137.
- \**Anthene crawshayi crawshayi* (Butler), 1899. Fig. and fig. genitalia, Bethune Baker, 1910.  
*Anthene crawshayi* ♀-f. *albilunulata* (Ungemach), 1932, *Mem. Soc. Sci. nat. phys. Maroc* **3** : 88, fig.
- \**Anthene crawshayi marginata* (Hulstaert), 1924, *Revue zool. afr.* **12** : 131.  
*Anthene crawshayi minuta* (Bethune Baker), 1916, *Trans. ent. Soc. Lond.* **49** :

- \****Anthene crawshayi parallela*** (Aurivillius), 1924. Genitalia, Stempffer, 1945, *Annls Soc. ent. Fr.* **94** : 83.
- \****Anthene crawshayi sobrina*** (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 208, fig.
- Anthene definita definita*** (Butler), 1899. Fig. Bethune Baker, 1910.  
*nigrocaudata* Pagenstecher, 1902.
- \****Anthene definita liguroides*** (Strand), 1911. Fig. 1924, Aurivillius in Seitz.  
*definita fasciata* (Ungemach), 1932.
- Anthene dewitzi*** (Staudinger), see *juba*.
- \****Anthene discimacula*** (Joicey & Talbot), 1921, *Bull. Hill Mus. Witley* **1** : 96 (♂).  
Fig. ♀ and genitalia, Stempffer, 1950, *Revue fr. Ent.* **17** : 142.
- Anthene dulcis*** (Pagenstecher), see *otacilia*.
- Anthene emolus*** (Trimen), see *liodes*.
- Anthene erythropeocilus*** (Holland), 1893. Fig. Bethune Baker, 1910.
- \****Anthene flavomaculatus*** (Smith & Kirby), 1893. Genitalia, Bethune Baker, 1910.
- Anthene grosei*** (Aurivillius), see *lunulata*.
- Anthene hewitsoni*** (Aurivillius), see *lunulata*.
- \****Anthene hobleyi hobleyi*** (Neave), 1904. Fig. genitalia, Bethune Baker, 1910.
- \****Anthene hobleyi elgonensis*** (Aurivillius), 1925, *Ent. Tidsk.* **46** : 210. Genitalia, Stempffer, 1945, *Annls Soc. ent. Fr.* **94** : 83.
- \****Anthene hobleyi kigezi*** Stempffer, 1961 : 63.
- \****Anthene hobleyi teita*** Stempffer, 1961 : 63.
- \****Anthene hodsoni hodsoni*** (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 125, 126, 207, fig.
- \****Anthene hodsoni usamba*** (Talbot), 1937, *Trans. R. ent. Soc. Lond.* **86** : 68, fig.
- \****Anthene indefinita*** (Bethune Baker), 1910, fig. et genitalia.  
*indefinita bigamica* (Strand), 1911.
- \****Anthene indefinita*** f. *oculata*, Stempffer, 1946, *Revue fr. Ent.* **13** : 15, fig.
- \****Anthene ituria*** (Bethune Baker), 1910 (♂). ♀, Talbot, 1935, *Entomologist's mon. Mag.* **71** : 207, fig.
- Anthene ja*** (H. H. Druce) (MS), see *bakeri*.
- \****Anthene juba*** (Fabricius), 1787. Fig. 1924, Aurivillius in Seitz. Genitalia, Bethune Baker, 1910.  
*dewitzi* (Staudinger), 1891.
- \****Anthene kampala*** (Bethune Baker), 1910 (♂). ♀, Stempffer, 1947, *Bull. Soc. ent. Fr.* **52** : 40. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 56.
- \****Anthene katera*** Talbot, 1937, *Trans. R. ent. Soc. Lond.* **86** : 68 fig. (♂). ♀, Stempffer, 1947, *Bull. Soc. ent. Fr.* **52** : 40. Genitalia, Stempffer, 1944 *Revue fr. Ent.* **11** : 57.
- \****Anthene lachares lachares*** (Hewitson), 1874 (♀). ♂ (as *pulcher*) Smith & Kirby, 1893. Genitalia, Bethune Baker, 1910.  
*liparis* (Smith), 1898.
- \****Anthene lachares obsolescens*** (Bethune Baker), 1910.

- \* *Anthene lachares toroensis* Stempffer, 1947, *Bull. Soc. ent. Fr.* **52** : 40.
- \* *Anthene larydas larydas* (Cramer), 1780. Genitalia, Bethune Baker, 1910.  
*pericles* (Fabricius), 1793.  
*Anthene larydas kersteini* (Gerstaecker), 1871.  
*Anthene larydas* var. (Godart), see *sylvanus*.
- \* *Anthene lasti* (Smith & Kirby), 1894. Genitalia, Bethune Baker, 1910.
- \* *Anthene lemnos lemnos* (Hewitson), 1878. Genitalia, Bethune Baker, 1910.  
*Anthene lemnos loa* (Strand), 1911.  
*Anthene leptala* (Strand), 1914.
- \* *Anthene leptines leptines* (Hewitson), 1874. Fig. Hewitson, 1878. Genitalia  
 Bethune Baker, 1910.
- \* *Anthene leptines arnoldi* (Aurivillius), 1923, *Ergebn. 2te D. Zent. Afr. Exp.*  
 1910-11, **1** : 1236. Homonym of *arnoldi* Jones, 1919.
- \* *Anthene levis levis* (Hewitson), 1878. Genitalia, Bethune Baker, 1910.
- \* *Anthene levis grisea* (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 208, fig.
- \* *Anthene ligures* (Hewitson), 1874. Fig. Hewitson, 1878. Genitalia, Stempffer,  
 1953, *Annls Mus. R. Congo belge* **29** : 32.  
*ligures amanica* (Strand), 1909 ; *ukerewensis pauperula* Strand, 1909.
- \* *Anthene liodes liodes* (Hewitson), 1874. Fig. Bethune Baker, 1910.  
*emolus* (Trimen), 1866 ; *sichela* (Hewitson), 1878 ; *adherbal* (Mabille), 1877 ;  
*monteironis* (Kirby), 1878.
- \* *Anthene liodes bihe* (Bethune Baker), 1910 (♂). ♀ Stevenson, 1937, *Occ. Pap.*  
*natn. Mus. sth. Rhod.* No. **6** : 33.  
*Anthene liparis* (Smith), see *lachares*.  
*Anthene lithas* ♀ (Smith & Kirby), see *lunulata*.  
*Anthene lochias* (Hewitson), see *princeps smithi*.  
*Anthene locra* (Plötz), see *sylvanus*.
- \* *Anthene locuples* (Smith) 1898. Fig. Smith & Kirby, 1901 ; fig., genitalia,  
 Stempffer, 1944, *Revue fr. Ent.* **11** : 56.  
*Anthene lukokesha* (Karsch), see *xanthopoecilus*.
- \* *Anthene lunulata lunulata* Trimen, 1894. Genitalia, Bethune Baker, 1910.  
*otacilia* (Hewitson), 1878 ; *hewitsoni* (Aurivillius), 1898.  
*grosei* (Aurivillius), 1898 ; *lithas* ♀ (Smith & Kirby), 1894.  
*Anthene lunulata* f. *magna* (Hulstaert), 1924, *Revue zool. afr.* **12** : 131.  
*Anthene lunulata aquilonis* (Hulstaert), 1924, l.c. : 130.
- \* *Anthene lychnaptēs* (Holland), 1891. Fig. 1924, Aurivillius in Seitz. Genitalia,  
 Stempffer, 1944, *Revue fr. Ent.* **11** : 59.  
*lychnoptera* (Smith & Kirby), 1893.  
*Anthene lychnides* (Hewitson), 1878.  
*Anthene lychnoptera* (Smith & Kirby), see *lychnaptēs*.  
*Anthene lycotas* (Smith), see *xanthopoecilus*.  
*Anthene lysias* (Hulstaert), see *afra*.
- \* *Anthene lysicles* (Hewitson), 1874. Fig. Hewitson, 1878. Genitalia, Bethune  
 Baker, 1910.



- Anthene madibirensis* (Wichgraf), 1921, *Int. ent. Z.* **14** : 179.
- \**Anthene mahota* (Smith), 1887. Fig. Smith & Kirby, 1893. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 58.
- \**Anthene makala* (Bethune Baker), 1910. Genitalia, Bethune Baker, 1910.  
*Anthene melambrotus* (Holland), 1893. Fig. Bethune Baker, 1910.
- \**Anthene millari* (Trimen), 1893. Genitalia, Bethune Baker, 1910.
- \**Anthene minima* (Trimen), 1893. Genitalia, Stempffer, 1936, *Revue fr. Ent.* **3** : 141.
- Anthene moncus* (Fabricius), see *sylvanus*.
- Anthene monteironis* (Kirby), see *liodes*.
- Anthene musagetes musagetes* (Holland), see *rubricinctus*.
- Anthene musagetes elgonensis* Stempffer, see *rubricinctus jeanneli*.
- Anthene neglecta* (Trimen), see *princeps*.
- \**Anthene ngoko* Stempffer, 1962 : 1174 ; fig. and fig. genitalia.
- Anthene nigrocaudata* (Pagenstecher), see *definita*.
- \**Anthene nigropunctata* (Bethune Baker), 1910. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 53.
- Anthene ochreofascia* (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 123, fig.
- Anthene olympusa* (Walker), see *amarah*.
- \**Anthene onias* (Hulstaert), 1924, *Revue zool. Afr.* **12** : 132. Genitalia, Stempffer, 1953, *Annls Mus. R. Congo Belge* **27** : 37.
- \**Anthene opalina opalina* Stempffer, 1946, *Revue fr. Ent.* **13** : 16, fig. and fig. genitalia.
- \**Anthene opalina janna* Gabriel, 1949, *Proc. R. ent. Soc. Lond. (B)* **18** : 214, fig.
- \**Anthene otacilia otacilia* (Trimen) 1868. Fig. Trimen, 1887. Genitalia, Bethune Baker, 1910.  
*dulcis* (Pagenstecher) 1902 ; *tongidensis* (Bethune Baker), 1926.
- \**Anthene otacilia benadirensis* Stempffer, 1947, *Bull. Soc. ent. Fr.* **52** : 39.
- \**Anthene otacilia kikuyu* (Bethune Baker), 1910. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 54.
- Anthene otacilia* (Hewitson) see *lunulata*.
- Anthene otacilia mashuna* (Stevenson), see *contrastata*.
- Anthene pericles* (Fabricius), see *larydas*.
- \**Anthene pitmani pitmani* Stempffer, 1936, *Revue fr. Ent.* **3** : 139, genitalia. Fig. Stempffer, 1944, *Revue fr. Ent.* **11**.
- \**Anthene pitmani somalina* Stempffer, 1936, *Revue fr. Ent.* **3** : 140.
- \**Anthene princeps princeps* (Butler), 1876. Fig. and fig. genitalia, Bethune Baker, 1910.  
*neglecta* (Trimen), 1891.
- \**Anthene princeps smithi* (Mabille), 1877. Fig. Mabille, 1887. Genitalia, Stempffer, 1936, *Revue fr. Ent.* **3** : 142.  
*lochias* (Hewitson), 1878.
- \**Anthene princeps smithi* f. *mabillei* (Lathy), 1921, *Ann. Mag. nat. Hist.* (9) **8** : 208. Fig. Lathy, 1926, *Lepidoptera*, 2. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 53.

- \**Anthene princeps ugandae* (Bethune Baker), 1910. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 52.  
*Anthene pulcher* (Smith & Kirby), see *lachares*.
- \**Anthene pyroptera* (Aurivillius), 1895. Fig. Aurivillius, 1898. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 58.  
*Anthene radiata* (Bethune Baker), 1910. Genitalia, Bethune Baker, 1910.
- \**Anthene rhodesiana* Stempffer, 1962 : 171, fig. and fig. genitalia.  
*Anthene rothschildi* (Aurivillius), 1922, *Voyage M. Rothschild en Ethiopie* : 364.
- \**Anthene rubricinctus rubricinctus* (Holland), 1891, (♀). Fig. Smith & Kirby, 1893. ♂ (as *musagetes*) Holland, 1893. Fig. Aurivillius, 1924, in Seitz. Genitalia, Bethune Baker, 1910.
- \**Anthene rubricinctus anadema* (H. H. Druce), 1905. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 50.
- \**Anthene rubricinctus jeanneli* Stempffer, 1961 : 64.  
*musagetes elgonensis* Stempffer, 1936 (invalid homonym).
- \**Anthene rubricinctus jeanneli* f. *latefasciata* Stempffer, 1944, *Revue fr. Ent.* **11** : 50, fig.
- \**Anthene rubrimaculata* (Strand), 1909. Genitalia, Stempffer, 1944, l.c. : 51.
- \**Anthene rufomarginata* (Bethune Baker), 1910, genitalia.  
*Anthene ruwenzoricus* (Grünberg), 1912.  
*Anthene saddacus* (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 123, fig.
- \**Anthene sanguinea* (Bethune Baker), 1910, genitalia.
- \**Anthene scintillula* (Holland), 1891. Fig. Smith & Kirby, 1893. Genitalia, Bethune Baker, 1910.
- \**Anthene sheppardi* Stevenson, 1940, *J. ent. Soc. sth. Afr.* **3** : 103, fig.
- \**Anthene schoutedeni* (Hulstaert), 1924, *Revue zool. afr.* **12** : 130. Genitalia, Stempffer, 1953, *Annls Mus. R. Congo belge*, **27** : 33.  
*Anthene sichela* (Hewitson), see *liodes*.  
*Anthene suquala* (Pagenstecher), 1902.  
*Anthene syllidus* (Hübner), see *sylvanus*.
- \**Anthene sylvanus sylvanus* (Drury), 1773. Genitalia, Bethune Baker, 1910.  
*moncus* ♀ (Fabricius), 1781 ; *syllidus* (Hübner), 1826 ; *larydas* var. (Godart), 1823 ; *locra* ♀ (Plötz), 1890.
- \**Anthene sylvanus albicans* (Grünberg), 1910.  
*sylvanus bugalla* Stempffer & Jackson, 1961.
- \**Anthene sylvanus niveus* Stempffer, 1953, *Annls Mus. R. Congo belge* **27** : 36.
- \**Anthene talboti* Stempffer, 1936, *Bull. Soc. ent. Fr.* **41** : 283 (♂). Fig. Stempffer, 1944 *Revue fr. Ent.* **11** ; Genitalia, Stempffer, 1938, *Mission Omo* **4** : 186. ♀, Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 127.  
*Anthene tongidensis* (Bethune Baker), see *otacilia*.  
*Anthene ukerewensis* (Strand), 1909.
- \**Anthene versatilis* (Bethune Baker), 1910.
- \**Anthene xanthopocilus* (Holland), 1893. Fig. Aurivillius in Seitz, 1924.  
*lukoksha* (Karsch), 1895 ; *lycotas* (Smith), 1898.

\**Anthene zenkeri* (Karsch), 1895. Fig. Bethune Baker, 1910. Genitalia, Stempffer, 1944, *Revue fr. Ent.* **11** : 60.

*Anthene zenkeri* ab. *connexa* (Aurivillius), 1923, *Ergebn. 2te D. Zent. Afr. Exped.*, 1910-11, **1** : 1237.

Genus *NEURYPEXINA* Bethune Baker

*Neurypexina* Bethune Baker, 1910, *Trans. ent. Soc. Lond.* **1910** : 64. Type-species : *Lycaenesthes lyzanius* Hewitson, by original designation.

*Lycaenesthes* Moore, 1866, (partim) ; Aurivillius 1898 : 351 ; 1924 : 454.

*Eyes* densely but shortly pilose ; palpi long, second segment laterally compressed, clothed below with long scales, third segment long, slender, acuminate ; antennae as in *Anthene* ; ♂ fore leg, femur clothed below with long hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below ; mid and hind legs, femora clothed with long hair, tibiae shorter than the femora and bearing two strong spurs, metatarsi very long.

*Wing shape.* As in *Anthene*.

*Wing venation* (Text-fig. 319). Fore wing with 11 veins ; 11 fused with 12 for some distance.

*Male genitalia* (Text-fig. 168) (see also Bethune Baker, 1910, pl. 11, figs 33-34). Uncus composed of two small lobes closely fused to the tegumen on either side of the median indentation, subunci long, slender, bent at about one-third of the way from base, tegumen deeply notched on its posterior edge, vinculum fairly wide with spatulate saccus ; lower fultura (furca) with slender arms ; valves oblong, sub-oval, the upper process ending in a short point recurved close to the terminal edge, the lower process ending in a long sharp point ; penis narrow at the base, dilated in the middle, then abruptly constricted to the apex ; uncus densely pilose, valves almost bare.

The genitalia of *lyzanius* closely resemble those of *Anthene flavomaculatus* Smith & Kirby, although Bethune-Baker says " the genitalia are decidedly different " without mentioning in what way they differ. I can see no striking difference in his figures, (1910, pl. 9, fig. 25) ; however, the subunci of *lyzanius* seem to me to be more slender and longer than those of *A. flavomaculatus*.

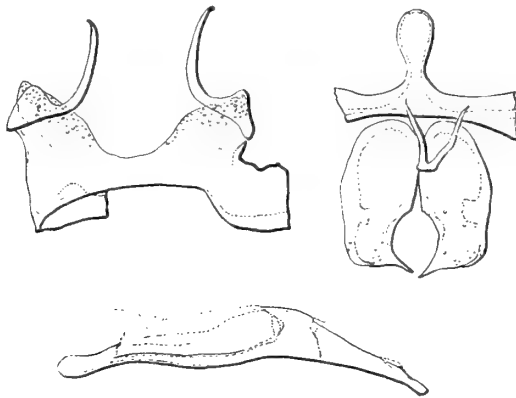


FIG. 168. *Neurypexina lyzanius* (Hewitson), ♂ genitalia.

The male genitalia of *N. lamprocles* scarcely differ from those of *lyzanius* except in the shape of the tip of the valves. In *kalinzu* the subunci are short and robust and the saccus robust and triangular. In *quadricaudata* the subunci are long and slender as in *lyzanius*, but the saccus is disproportionately long, the valves digitate, almost filiform, and the penis extremely long and thin. *N. quadricaudata* was described as a *Triclema*, but the presence of vein 8 in the fore wing places it in *Neurypexina*, which is only to be distinguished from *Anthene* by the fore wing venation.

The larva of *N. lyzanius* has been described by Lamborn, 1913, *Trans. ent. Soc. Lond.* 1913 : 484. It lives in company with the ant *Pheidole rotundata*.

#### LIST OF SPECIES OF *Neurypexina*

- \**Neurypexina kalinzu* Stempffer, 1950, *Revue fr. Ent.* 16 : 143, fig. genitalia.
- \**Neurypexina lamprocles* (Hewitson), 1878. Fig. genitalia, Stempffer, 1944, *Revue fr. Ent.* : 60.
- \**Neurypexina lyzanius* (Hewitson), 1874. Fig. Hewitson, 1878. Fig. genitalia, Bethune Baker, 1910.  
*regillus* (Holland), 1891 ; *turbatus* (Smith & Kirby), 1893.
- \**Neurypexina quadricaudata* (Bethune Baker), 1926, *Ann. Mag. nat. Hist.* (9) 17 : 400 (♀). Stempffer, 1951, *Bull. Soc. ent. Fr.* 56 : 69, fig. ♂ genitalia.  
*Neurypexina regillus* (Holland), see *lyzanius*.  
*Neurypexina turbatus* (Smith & Kirby), see *lyzanius*.

#### Genus *NEURELLIPES* Bethune Baker

*Neurellipes* Bethune Baker, 1910, *Trans. ent. Soc. Lond.* 1910 : 66. Type-species : *Lycaenesthes lusones* Hewitson, by original designation.

*Lycaenesthes* Moore, 1866 (partim) ; Aurivillius, 1898 : 352 ; 1924 : 455.

*Monile* Ungemach, 1932. Type-species : *Monile pluricauda* Ungemach (*gemmifera* Neave, 1910).

*Eyes* densely pilose, palpi extending well beyond the frons, second segment laterally compressed, clothed above with scales and below with stiff hair, third segment fairly long, acuminate ; antennae like those of *Anthene* ; ♂ fore leg tibia shorter than femur, tarsus unsegmented, finely spinose below ; mid and hind legs, femora clothed with long hair, tibiae shorter than the femora and bearing two robust spurs, metatarsi very long.

*Wing shape.* Like that of *Anthene*.

*Wing venation* (Text-fig. 320). Fore wing with 10 veins, veins 8 and 9 absent, 10 and 11 free.

*Male genitalia* (Text-fig. 169) (see also Bethune Baker, l.c. pl. 13, figs 35-36). Uncus composed of two oval lobes narrowly fused to the tegumen on either side of the median indentation, subunci with very robust bases, tapered, and bent at about one-third, posterior margin of tegumen deeply excised, vinculum fairly wide, with a long saccus ; lower fultura (furca) with a pyramidal base and long slender arms ; valves wide with finely serrated distal edges, then deeply excised, the upper process ending in a sharp point, the lower process in a strong tooth, penis elongate, the upper surface of the internal portion widely open, the external portion evenly tapered and ending in a trumpet-shaped apex, uncus and apices of valve pilose.

The male genitalia of *N. chryseostictus* and *N. fulvus* are of the same type as those of *N. lusones*, that is to say their valves are quadrangular, and even expanded

distally. In *N. likouala* and *N. aequatorialis* the subunci are a little longer and more slender than in the preceding species, and the upper process of the valves is folded back towards the apex, against the lower process, both of them ending in a point. In *N. staudingeri* the valves take a very characteristic form, the two processes being separate almost from the base, the upper one being long, very curved and ending in a point, the lower one, equally long, being apically spatulate. The armature of *N. gemmifera* is remarkable in the size of the penis, which is enormous in relation to the other parts, shaped like a very elongate oval and encloses, towards the apex, a rather large cuneus.

LIST OF SPECIES OF *Neurellipes*

- \**Neurellipes aequatorialis* Stempffer, 1962 : 1178, fig. and fig. genitalia.
- \**Neurellipes chryseostictus* Bethune Baker, 1910, fig. genitalia.
- Neurellipes fulvimacula* (Mabille), see *lusones*.
- \**Neurellipes fulvus* Stempffer, 1962 : 1180, fig. and fig., genitalia.
- \**Neurellipes gemmifera* (Neave), 1910. Fig. genitalia, Stempffer, 1944, *Revue fr. Ent.* 11 : 61.
- pluricauda* (Ungemach), 1932.
- \**Neurellipes likouala* Stempffer, 1962 : 1176, fig. and fig. genitalia.
- \**Neurellipes lusones* (Hewitson), 1874. Fig. Hewitson, 1878. Fig. genitalia, Bethune Baker, 1910.
- fulvimacula* (Mabille), 1890.
- Neurellipes meander* (Plötz), 1880. Fig. Aurivillius in Seitz, 1924.
- Neurellipes pluricauda* (Ungemach), see *gemmifera*.
- \**Neurellipes staudingeri staudingeri* (Smith & Kirby), 1894. Fig. genitalia, Bethune Baker, 1910.
- \**Neurellipes staudingeri obsoleta* Stempffer, 1947, *Bull. Soc. ent. Fr.* 52 : 41.

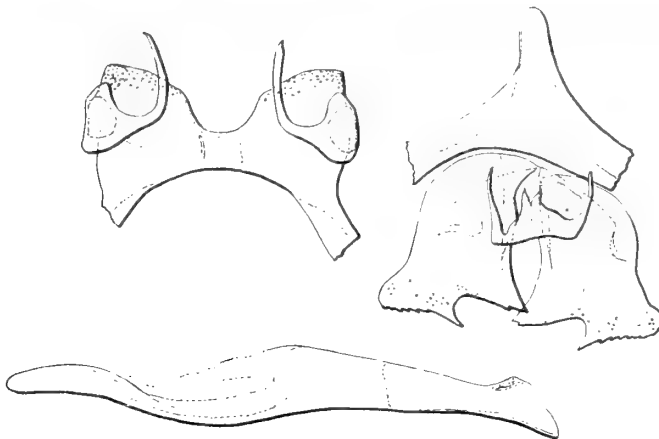


FIG. 169. *Neurellipes lusones* (Hewitson), ♂ genitalia.

Genus *TRICLEMA* Karsch

*Triclema* Karsch, 1893, *Bevl. ent. Z.* **38** : 227 ; Bethune Baker, 1910 : 70 Type-species :

*Lycaenesthes lucretilis* Hewitson, by original designation.

*Lycaenesthes* Moore, 1866 (partim) ; Aurivillius, 1898 : 345, 1924 : 450.

*Eyes* finely pilose ; palpi long, second segment laterally compressed, clothed below with long stiff black and white bristles, third segment fairly long, slender, acuminate ; antennae slender, three-fifths the length of the costa, club fusiform ; ♂ fore leg, femur clothed with long white hair, tibia shorter than femur, tarsus unsegmented.

*Wing shape.* Like that of *Anthene*, the hind wing with a small pencil of hair at the ends of veins 1b, 2 and 3.

*Wing venation* (Text-fig. 321). *Fore wing* with 10 veins ; 8 and 9 absent ; 10 free from the upper edge of the cell ; 11 broadly confluent with 12.

*Male genitalia* (Text-fig. 170). Uncus composed of two small subtriangular lobes with rounded apices and fused to the lateral angles of the tegumen ; subunci long with massive bases, bent in an obtuse angle near the base and with a terminal claw ; tegumen subrectangular with a shallow rounded depression in the posterior margin ; vinculum fairly wide, with a long tapering saccus ; lower fultura two slender curved arms ; valves elongate, the folded over upper edge forming a sharp point at about three-quarters of the total length and hooked at the apex, the lower edge also forming a sharp point in the distal half ; penis elongate, slightly bent, swollen in its internal portion, then tapering in the external part and dilated just before the pointed apex ; uncus and distal part of valves clothed with long fine hair.

The male genitalia of *nigeriae*, *measseni*, *hades*, *phoenicis*, *kamilila ituriensis*, *lutzi* and *rufoplagata* are very like those of *lucretilus*, the posterior margin of the tegumen being scarcely at all excavate on the median line, and the margins of both processes of the valves being provided with a robust tooth. In *T. lamias* the posterior margin of the tegumen is more deeply concave, and the valves are more produced with a recurved apex. The genitalia of *obscura*, *inconspicua* and *lacidus* are much the same, but the terminal margin of the tegumen is much more deeply concave, the apex of the valves more deeply incised and the two processes each end in a sharp stout tooth. I figure the genitalia of *obscura* (Text-fig. 171).

I have not been able to examine *Triclema fasciatus*, of which Aurivillius writes in his original description " Alis subtus albidis signaturis nigris fere ut in *L. staudingeri* formatis et ordinatis " and, again, " Die Art steht dem *L. staudingeri* ohne zweifel

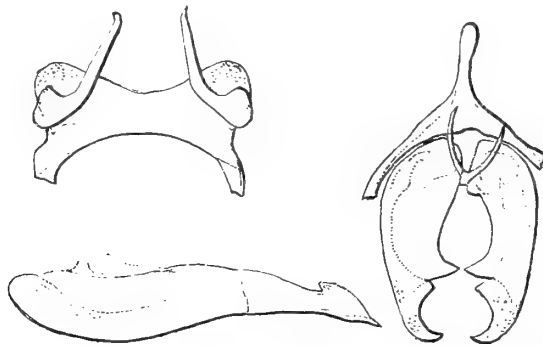


FIG. 170. *Triclema lucretilis lucretilis* (Hewitson), ♂ genitalia.

ziemlich nahe". Bethune Baker, however, under the name *fasciatus* Aurivillius, figures firstly (1910, pl. III, figs 15, 16) a male and female of a species of which the underside seems very different from that of *staudingeri*, and secondly (pl. XIII, fig. 45) genitalia which, on the other hand, seem almost identical with those of *staudingeri*. It would appear that some confusion has crept into the explanations of these figures.

The caterpillar of *lucretilis* has been described by Lamborn (1913, *Trans. ent. Soc. Lond.* **1913** : 485) ; that of *lamias* by Farquharson (1921, *Trans. ent. Soc. Lond.* **1921** : 387) ; and that of *nigeriae* by Jackson, (1937, *Trans. R. ent. Soc. Lond.* **86** : 227).

LIST OF SPECIES OF *Triclema*

- Triclema africana*** Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 400.  
***Triclema caerulea*** (Aurivillius), 1895. Fig. Bethune Baker, 1910.  
***Triclema fasciatus*** (Aurivillius), 1895. Fig. et genitalia, Bethune Baker, 1910 (?).  
*subnitens* (Bethune Baker), 1903.  
 \****Triclema hades*** Bethune Baker, 1910. Fig. genitalia, Bethune Baker, 1910.  
 \****Triclema inconspicua*** H. H. Druce, 1910.  
***Triclema inferna*** Bethune Baker, 1926, *Ann. Mag. nat. Hist.* (9) **17** : 399.  
 \****Triclema ituriensis*** Joicey & Talbot, 1921, *Bull. Hill Mus. Witley* **1** : 98, fig.  
 \****Triclema kamilila*** Bethune Baker, 1910. Fig. genitalia, Bethune Baker, 1910.  
 \****Triclema lacides*** (Hewitson), 1874. Fig. ♂, Hewitson, 1878 ; ♀ Bethune Baker, 1910.  
 \****Triclema lamias*** (Hewitson), 1878, (♂). ♀ and genitalia, Bethune Baker, 1910.  
***Triclema lucretia*** (Smith & Kirby), see *lucretilis*.  
 \****Triclema lucretilis lucretilis*** (Hewitson), 1874. Fig. ♂, Hewitson, 1878 ; ♀, Bethune Baker, 1913.  
*lucretia* (Smith & Kirby), 1894.  
***Triclema lucretilis albipicta*** Talbot, 1935, *Entomologist's mon. Mag.* **71** : 127.  
 \****Triclema lutzi*** Holland, 1920, *Bull. Am. Mus. nat. Hist.* **43** : 229. Fig. and fig. genitalia, Stempffer, 1953, *Annls Mus. R. Congo belge* **27** : 39.  
***Triclema lydia*** Hulstaert, see *nigeriae*.

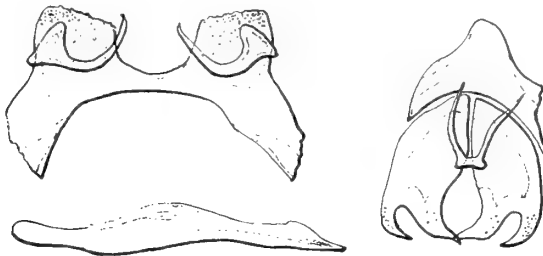


FIG. 171. *Triclema obscura* Druce, ♂ genitalia.

- \**Triclema maesseni* Stempffer, 1957, *Bull. Inst. Afr. noire* **19** : 223 : fig. genitalia.  
*Triclema marshalli* (Bethune Baker), 1903. Fig. Bethune Baker, 1910.  
 \**Triclema nigeriae* (Aurivillius), 1905. Fig. Aurivillius in Seitz, 1924.  
*lydia* Hulstaert, 1924. Fig. genitalia, Stempffer, 1953, *Annls Mus. R. Congo belge* **27** : 38.  
 \**Triclema obscura* H. H. Druce, 1910.  
*Triclema oculatus* (Smith & Kirby), 1893.  
 \**Triclema phoenicis* Karsch, 1893. Fig. and fig. genitalia, Bethune Baker, 1910.  
 \**Triclema rufoplagata* Bethune Baker, 1910, and fig. genitalia, Bethune Baker, 1910.  
*Triclema subnitens* (Bethune Baker), see *fasciatus*.  
*Triclema tisamenus* (Holland), 1891. Fig. Bethune Baker, 1910.

### Genus *PHLYARIA* Karsch

*Phlyaria* Karsch, 1895, *Ent. Nachr.* **21** : 302. Type-species : *Lycaena cyara* Hewitson, by original designation.  
*Cupido* Schrank (partim) ; Aurivillius, 1898 : 358 ; 1924 : 460.

*Eyes* shortly and densely pilose, palpi long, ascending, second segment long, clothed below with adpressed scales and some short stiff bristles, third segment short, very slender at its base, swollen in the middle and with a blunt apex ; antennae slender, a little longer than half the length of the costa, with a well differentiated fusiform club ; thorax clothed below with long white silky hair, legs long and slender ; ♂ fore leg with tibia shorter than the femur, tarsus unsegmented, finely spinose below.

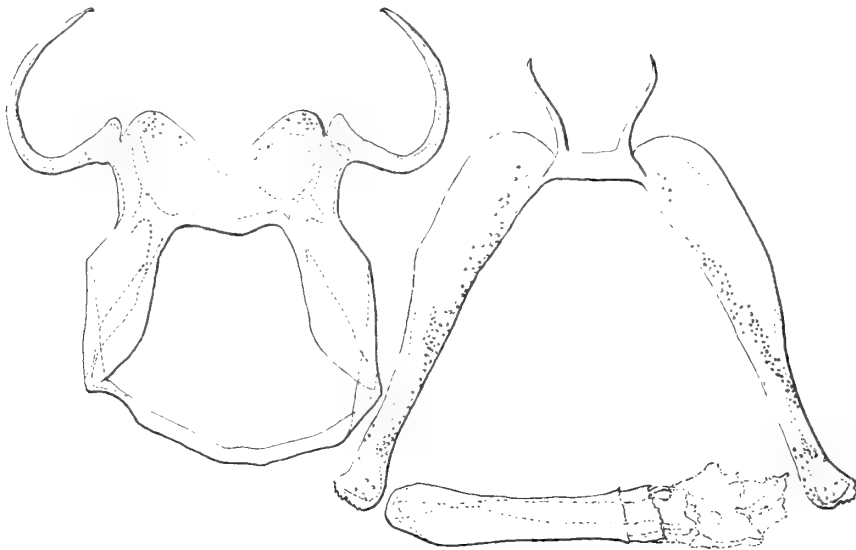


FIG. 172. *Phlyaria cyara cyara* (Hewitson), ♂ genitalia.



*Wing shape.* Fore wing subtriangular, outer margin very slightly convex ; hind wing suboval, a short filiform tail at the end of vein 2, anal angle well marked.

*Wing venation* (Text-fig. 322). Fore wing with 11 veins ; 11 confluent with 12 for part of its length.

*Male genitalia* (Text-fig. 172). Uncus reniform with rounded lateral angles ; subunci long and slender, bent at two-fifths from base, apex unguiculate (*in situ* the subunci are folded back under the uncus) ; tegumen reduced ; vinculum wide above, narrow below ; lower futura in the form of a furea with two slender curved arms ; valves narrow, long, slightly swollen at the base, apex spatulate with strongly serrated edge ; penis cylindrical, slightly swollen at its base ; apex of uncus and lower edge of valves clothed with many fine hairs.

The genital armatures of *stactalla* and *cyara* are identical, for which reason I regard the former as a subspecies of the latter. The genitalia of *heritsia* are of the same type as those of *cyara*, but the valves are broader and shorter with long sharp apical teeth. The genitalia of *chibonotana* and *heritsia* again are identical, the former being a subspecies of the latter.

The early stages of *cyara* and *heritsia* have been described by T. H. E. Jackson (*Trans. R. ent. Soc. Lond.* 1937 : 228).

LIST OF SPECIES OF *Phlyaria*

\**Phlyaria cyara cyara* (Hewitson), 1876.

\**Phlyaria cyara* f. *tenuimarginata* (Grünberg,) 1908.

\**Phlyaria cyara stactalla* Karsch, 1895. Fig. Aurivillius in Seitz, 1924.

\**Phlyaria heritsia heritsia* (Hewitson), 1876 (♂).  
*virgo* (Butler), 1896 (♀).

\**Phlyaria heritsia chibonotana* (Aurivillius), 1910. Fig. Gabriel, 1939, *Ruwenzori Exp.*

*Phlyaria heritsia intermedia* Tite, 1958, *Entomologist* 91 : 115, fig.

*Phlyaria virgo* (Butler), see *heritsia*.

Genus *URANTHAUMA* Butler

*Uranthauma* Butler, 1895, *Proc. zool. Soc. Lond.* : 631 ; Pinhey, 1949 : 111 ; Swanepoel, 1953 : 76. Type-species : *Uranthauma crawshayi* Butler, by original designation. *Cupido* Schrank (partim) ; Aurivillius, 1898 ; 359 ; 1924 : 461.

*Eyes* densely and shortly pilose ; palpi long, ascending, second segment very long, laterally compressed, clothed below with adpressed white scales and long stiff black bristles, above with black scales, third segment slender, cylindrical ; antennae slender, a little more than half the length of the costa, club well differentiated, flattened ; ♂ fore leg, femur clothed with long hair, tibia slightly shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing with costa slightly arched, apex slightly rounded, outer margin slightly convex and scalloped, hind wing with costa almost straight, outer margin slightly scalloped, a short triangular tail at the end of vein 2, a small indistinct lobe at the anal angle.

*Wing venation* (Text-fig. 323). Fore wing with 11 veins, 10 and 11 free from the upper edge of the cell, the latter being bent towards, and almost touching 12. Androconial scales are present in nearly all the species of *Uranthauma*, either grouped in a large velvety patch as in *crawshayi*, or in the form of long internervular rays as in *falkensteini*.

*Male genitalia* (Text-fig. 173). Uncus composed of two oval lobes fused to the tegumen and separated by the concave margin of the latter, subunci long and curved, gradually tapered; tegumen reduced; vinculum broad above, narrow below; lower fultura furca-like with two curved, tapering arms; valves oblong with spatulate and slightly serrate apices; penis oblong, slightly swollen at its base, vesica with a shagreened appearance; apices of uncus and valves pilose.

With the exception of *nubifer*, all the species of *Uranothauma* have male genitalia like those of *crawshayi*, only differing in the shape of the valves, which furnish good specific characters and enable one to separate *artemenes* on the one hand, and on the other, to associate *lunifer* with *poggei*. In *nubifer* the uncus lobes are smaller than in other species, the subunci shorter, the tegumen is larger and its distal margin less concave, and the upper part of the vinculum is expanded in the form of a triangle directed cephalad.

The early stages of *nubifer*, *delatorum* and *falkensteini* have been described by Jackson, (1937, *Trans. R. ent. Soc. Lond.* **86** : 229-230). The caterpillars live on species of Mimosaceae, for *nubifer*, see also Pinhey, 1949 : III.

#### LIST OF SPECIES OF *Uranothauma*

\**Uranothauma antinorii* (Oberthür), 1883. Fig. genitalia, Stempffer, 1938, *Mission Omo*, **4** : 190.

*Uranothauma antinorii* f. *albicans* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 147, fig.

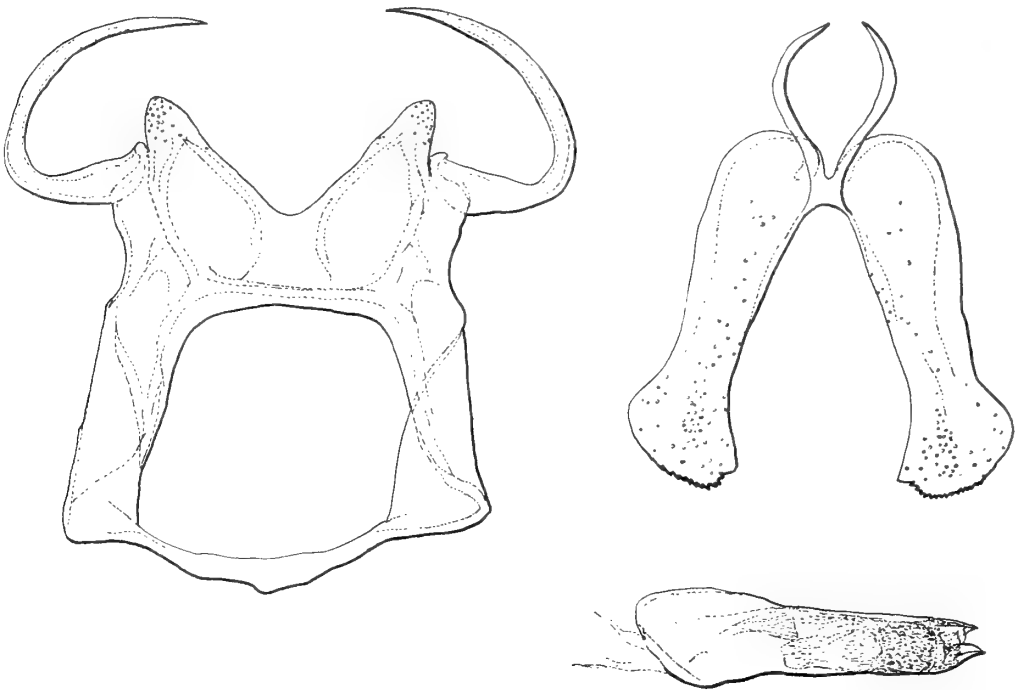


FIG. 173. *Uranothauma crawshayi* Butler, ♂ genitalia.

- Uranothauma antinorii* f. *felthami* (Stevenson), 1934, *Occ. Pap. natn Mus. Sth. Rhod.* 16. Fig. Stevenson, 1940, *J. ent. Soc. sth. Afr.* 3.
- Uranothauma antinorii* f. *magnificans* Stoneham, 1937, *Bull. Stoneham Mus.* 34 : 3.
- Uranothauma antinorii* f. ♀ *splendens* Stoneham, 1937, *Bull. Stoneham Mus.* 34 : 3.
- \**Uranothauma artemenes* (Mabille), Feb. 1880. Fig. Mabille 1885 : 7. Fig. genitalia, Stempffer, 1938, *Mission Omo* 4 : 193.  
*auratus* (Butler), April, 1880.
- Uranothauma auratus* (Butler), see *artemenes*.
- \**Uranothauma cordatus* (E. Sharpe), 1891 (♂). Fig. ♀ and genitalia, Stempffer, 1938, *Mission Omo* 4 : 188.
- \**Uranothauma crawshayi* Butler, 1895.  
*crawshayinus* Aurivillius, in Seitz, 1925 : 473.
- Uranothauma cuneatum* Tite, 1958, *Entomologist* 91 : 117, fig. and fig. genitalia.
- \**Uranothauma delatorum* Heron, 1909. Fig. genitalia, Stempffer, 1938, *Mission Omo* 4 : 191.
- \**Uranothauma falkensteini* (Dewitz), 1879. Fig. genitalia, Stempffer, 1938. l.c. : 191.
- Uranthauuma falkensteini* f. *albescens* Stoneham, 1937, *Bull. Stoneham Mus.* 34 : 3.
- Uranothauma falkensteini* ♀-f. *umbra* Talbot, 1935, *Entomologist's mon. Mag.* 71 : 148.
- \**Uranothauma nubifer* (Trimen), June 1895. Fig. genitalia, Stempffer, 1938, *Mission Omo* 4 : 191.  
*pelotus* (Karsch), October 1895.
- Uranothauma nubifer* f. *distinctesignatus* (Strand), 1911. Fig. Aurivillius in Seitz, 1925.
- Uranothauma pelotus* (Karsch), see *nubifer*.
- \**Uranothauma poggei poggei* (Dewitz), 1879. Fig. Aurivillius in Seitz, 1925.
- \**Uranothauma poggei lunifer* Rebel, 1914.
- \**Uranothauma vansomereni* Stempffer, 1951, *Bull. Soc. ent. Fr.* 56 : 128, fig.
- \**Uranothauma williamsi* Carcasson, 1961, *Occ. Pap. Coryndon meml Mus.* 7 : 21, fig. and fig. genitalia.

Genus **CACYREUS** Butler

*Cacyreus* Butler, 1898, *Proc. zool. Soc. Lond.* 1897 : 845 ; Pinhey, 1949 : 111 ; Swanepoel, 1953 : 67. Type-species : *Papilio lingeus* Cramer, by original designation.  
*Hyreus* Hübner, 1826, *Verz. bek. Schmett.* : 70 (invalid junior homonym).  
*Cupido* Schrank (partim) ; Aurivillius, 1898 ; 360 ; 1924 : 463.  
*Lycaena* Fabricius (partim) ; Murray, 1935 : 146.

*Eyes* densely and shortly pilose, palpi long, ascending, second segment laterally compressed, clothed below with scales and long stiff hair, third segment slender, ending in a sharp point, antennae slender, about half the length of the costa, club elongate and flattened ; thorax rather

robust, clothed below with white hair, ♂ fore leg, femur clothed below with long white hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex angular, outer margin slightly convex ; hind wing suboval, anal angle well marked, a short filiform tail at the end of vein 2.

*Wing venation* (Text-fig. 324). Fore wing with 11 veins ; 10 and 11 free from the upper edge of the cell ; 12 is slightly curved towards 11, but not touching it.

*Male genitalia* (Text-fig. 174). Uncus composed of two small subtriangular lobes with rounded apices fused to the lateral angles of the tegumen, each bearing a small projecting tubercle with rounded apex crowned with stiff hairs ; subunci very robust with massive bases, curved, and ending in an open claw ; tegumen large with a very convex posterior margin, giving the dorsal structures a trilobed appearance ; vinculum broad above, narrow below ; lower fultura furca-like with slender arms ; valves broadly oval at the base ; distally spatulate, the lower edge bearing sharp and irregular teeth which vary somewhat in shape in different specimens ; penis short, stumpy, vesica with fine cornuti ; uncus and distal portions of the valves pilose.

In their external characters (colour and markings of the wings) *darius*, *virilis* and *audeoudi* so closely resemble *lingeus* that they have for a long time been considered varieties of it ; their genitalia, however, show quite clearly that they are separate species.

In *darius* (Text-fig. 175) the dorsal structures resemble those of *lingeus*, but the two processes of the valve are widely separate at their apices and the upper one, which is much longer than the lower one, is broad and heel-shaped.

In 1938 (*Mission Omo* 4 : 196) I figured the male genitalia of *virilis* and *audeoudi*. Examination of these figures will show that in these two species the valves resemble those of *lingeus*, but the dorsal structures are very different : no tubercles on the uncus lobes, subunci longer and less robust, and in particular the posterior margin of the tegumen, instead of being markedly convex, is concave and so reduced to a narrow band medially.

In *ethiopicus* and *dicksoni* (for reference to figures see list of species) the tegumen is similarly reduced to a narrow band in its median portion, but tubercles on the

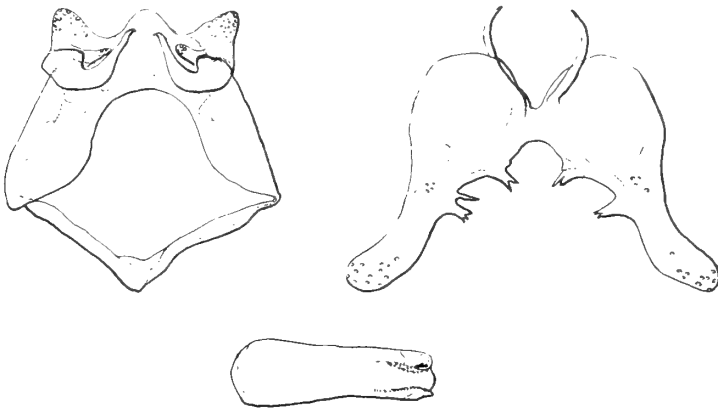


FIG. 174. *Cacyreus lingeus lingeus* (Cramer), ♂ genitalia.

uncus are developed to form two lobes, which are longer in *dicksoni*, and the valves are elongate, slightly spatulate apically and smooth in outline.

In 1938 (l.c. : 199) I also figured the genitalia of *palaemon* and *marshalli*. In these the terminal margin of the tegumen is deeply concave, the uncus tubercles have become long digitate sclerites, the valves are oblong, massive in *marshalli* but deeply cleft apically in *palaemon*, the lower process much longer than the upper one.

The early stages of *lingeus*, *palaemon* and *marshalli* have been described by Murray (1935 : 148), by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 230) and by Dickson (1944, *J. ent. Soc. sth. Afr.* **7** : 96 ; 1945, **8** : 150 ; and 1947, **10** : 127). The caterpillar of *lingeus* feeds on various species of Labiatae ; those of *palaemon* and *marshalli* on Geraniaceae. According to Jackson the colour of the caterpillar of *lingeus* varies considerably and always matches the colour of the species of Labiatae on which it feeds.

LIST OF SPECIES OF *Cacyreus*

- \**Cacyreus audeoudi* Stempffer, 1936, *Bull. Soc. ent. Fr.* **41** : 284. Genitalia, Stempffer, 1938, *Mission Omo* **4** : 197.
- \**Cacyreus darius* (Mabille), 1877. Fig. Mabille, 1885 : 7.
- \**Cacyreus dicksoni* Pennington, 1962, *J. ent. Soc. sth. Afr.* **25** : 283, fig. and fig. genitalia.
- Cacyreus ericus* (Fabricius), see *lingeus*.
- Cacyreus ethiopicus* Tite, 1961, *Entomologist* **94** : 112, fig. and fig. genitalia.
- \**Cacyreus lingeus lingeus* (Cramer), 1781.  
*ericus* (Fabricius), 1793.
- \**Cacyreus lingeus ciliaris* (Aurivillius), 1910.
- \**Cacyreus marshalli* Butler, 1898. Genitalia, Stempffer, 1938, *Mission Omo* **4** : 200.  
*lingeus* ♀ (Wallengren), 1857.

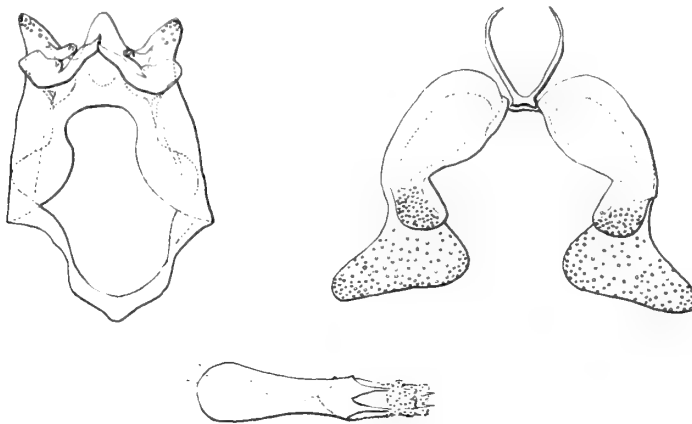


FIG. 175. *Cacyreus darius* (Mabille), ♂ genitalia.

\**Cacyreus palemon palemon* (Cramer), 1782. Fig. genitalia, Stempffer, 1950, *Revue fr. Ent.* : 145.  
*tespis* (Herbst).

*Cacyreus palemon* f. *fracta* (Grünberg), 1912.

\**Cacyreus palemon* f. *ecaudata* Stempffer, 1950, *Revue fr. Ent.* **17** : 145.

\**Cacyreus palemon ghimirra* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 148.  
Fig. genitalia, Stempffer, 1938, *Mission Omo* **4** : 198 ; 1950, *Revue fr. Ent.* **17** : 145.

*Cacyreus tespis* (Herbst), see *palemon*.

\**Cacyreus virilis* (Aurivillius), 1924. Genitalia, Stempffer, 1938, *Mission Omo* **4** : 196.

### Genus *CASTALIUS* Hubner

*Castalius* Hübner, 1819, *Verz. bek. Schmett* (5) : 70 ; Pinhey, 1949 : 112 ; Swanepoel, 1953 : 62.  
Type-species : *Papilio rosimon* Fabricius (Indo-Malayan), designated by Scudder, 1875, *Proc. Am. Acad. Arts Sci.* **3** : 135.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 363, 1924 : 466.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 155.

Eyes glabrous ; palpi long, ascending, slightly divergent ; second segment long, laterally compressed, clothed below with long white adpressed scales ; third segment long, slender acuminate ; antennae slender, a little longer than half the length of the costa, club elongate, flattened ; thorax clothed below with white hair ; ♂ fore leg, femur clothed with white hair, tibia shorter than femur, tarsus unsegmented, finely spinose below.

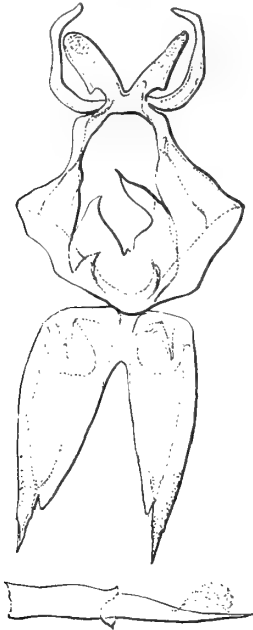


FIG. 176. *Castalius rosimon* (Fabricius), ♂ genitalia.

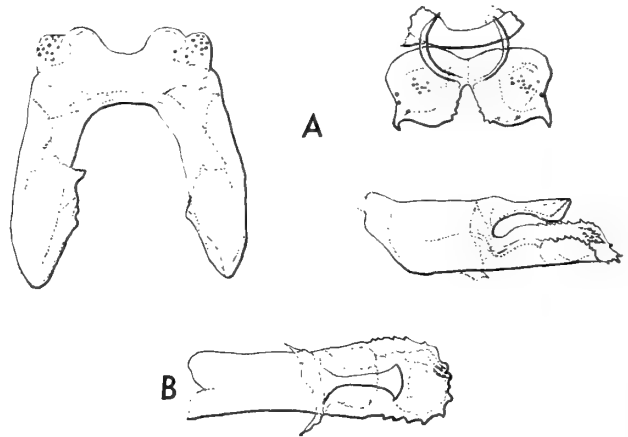


FIG. 177. *Castalius hintza hintza* (Trimen), ♂ genitalia. A, Bulawayo ; B, Kaikai Hills, N. of Ngami.

*Wing shape.* Fore wing subtriangular, hind wing oval, a thread-like tail about 3 mm. long, at the end of vein 2.

*Wing venation* (Text-fig. 325). Fore wing with 11 veins ; 11 bent and touching 12 at one point.

*Male genitalia* (Text-fig. 176). Uncus composed of two oblong lobes with rounded apices, subunci long, slightly curved, with blunt apices, folded under the uncus ; tegumen very much reduced, dorsally on the whole somewhat resembling species of holarctic Lycaeninae, vinculum very wide ; lower fultura curtain-shaped and fused to the penis, which cannot be extracted without tearing open the apex of the fultura ; valves subtriangular, the two processes slightly separated at their lightly serrated apices, near the base on the inner surface there is a rounded, semimembranous process ; penis elongate, cylindrical in its internal portion, gradually tapering in its external portion to a sharply pointed apex, uncus and apices of valves pilose.

The male genitalia of the ethiopian species generally placed in the genus *Castalius* are entirely different from those of *rosimon*, the type-species ; and they also display such a lack of uniformity that it is desirable to deal with each one individually.

*C. hintza.* Male genitalia (Text-fig. 177) : uncus composed of two small semicircular lobes fused to the lateral angles of the tegumen ; no subunci ; tegumen very large with a rounded depression in its terminal margin ; vinculum very wide above ; lower fultura of two curved arms ; valves much reduced, disc-shaped, with a small hook at the apex ; penis highly specialized, short, massive, the external portion divided into two processes, one short, spatulate, the other long, gutter-shaped, with slightly serrated edges and enclosing a sheaf of imbricated spines ; uncus and middle of valves pilose. The wing venation also differs slightly from that of *rosimon* inasmuch as in the fore wing vein 11 comes very near 12 but does not touch it.

*C. calice.* Male genitalia (Text-fig. 178) : uncus composed of two small oval lobes fused to the lateral angles of the tegumen ; subunci short, massive, only slightly curved, with a widened, strongly dentate apex ; tegumen rather large, its posterior margin only slightly concave, lower fultura in the form of a small lamella with slightly spatulate apex ; valves very large, the upper process folded under the lower one and ending in a finely spinose rounded apex, lower process connected to the vinculum by a membrane, its lower edge bearing teeth which are irregular in shape and size, its apex widely falcate ; penis minute, slightly curved, gradually tapering ; uncus pilose, valves with longer hair.

*C. gregorii.* Male genitalia differ from those of *calice* only by the heavier upper process of the valves. Probably these two species are only two races of the same species.

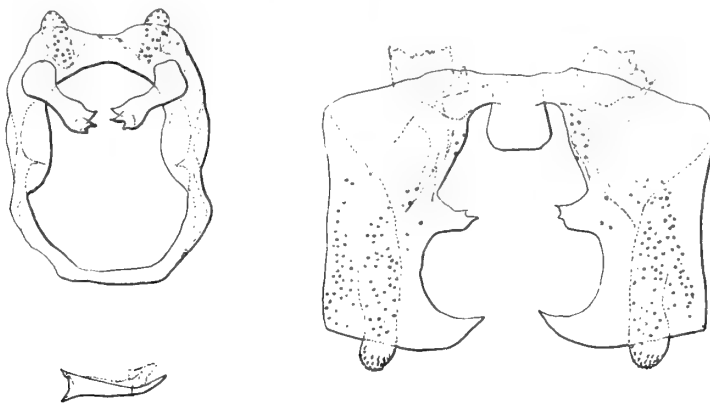


FIG. 178. *Castalius calice calice* (Hopffer), ♂ genitalia.

*C. cretosus*. Male genitalia (Text-fig. 179) : resembling those of *calice* but the valves are not so large, the upper process, which is folded under the lower one, ending in a long sharp point clothed with strong spines, the lower process, also connected to the vinculum by a membrane, armed with a tooth in the middle of its lower edge.

*C. kaffana*. Male genitalia (Text-fig. 180) : closely resembling those of *cretosus* except that the terminal point of the upper process of the valves is shorter and more robust, and the apex of the lower process differs slightly in shape.

*C. melaena*. Male genitalia (Text-fig. 181) : uncus composed of two rounded lobes fused on either side of the median concavity of the tegumen ; subunci long, bent close to their massive base and gradually tapering to the apex ; tegumen large, the dorsal part of the vinculum prolonged towards the eighth abdominal segment by a rounded expansion, ventral part narrow ;

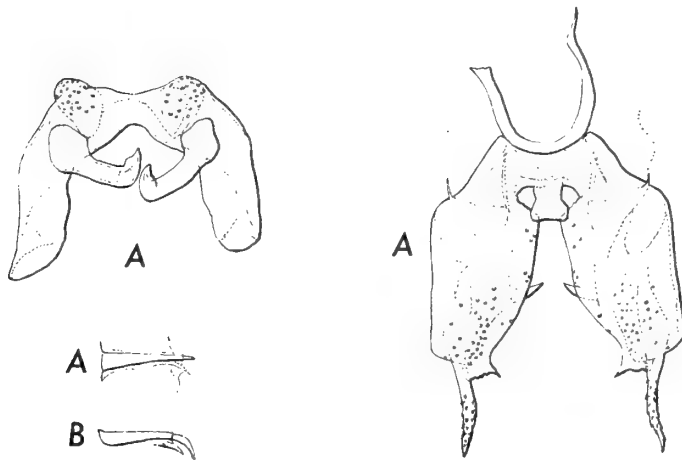


FIG. 179. *Castalius cretosus cretosus* Butler, ♂ genitalia. A, Sudan-Abyssinia border ; B, Elgon, 3500 m., penis, lateral.

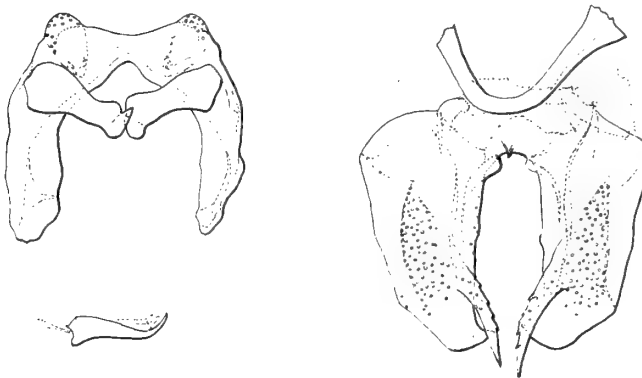


FIG. 180. *Castalius kaffana* Talbot, ♂ genitalia.



lower fultura well developed, in the shape of a St. Andrew's cross whose lower arms are fused to the valves ; valves oblong, widely connected to the vinculum by a membrane, the upper process folded under the lower one, short, curved and ending in a sharp point, the lower process having strongly serrated edges ; penis minute, uncus and middle of valves pilose.

*C. griqua*. Male genitalia identical with those of *melaena*, with which it is probably conspecific.

*C. carana*. Male genitalia (Text-fig. 182) : uncus composed of two small flattened lobes fused to the tegumen ; subunci long, bent near the base, tapering to an apex which bears an open claw ; tegumen and vinculum large ; no lower fultura ; valves oblong, the upper process folded under the lower one and both ending in a sharp point ; penis of normal size, elongate, external portion short, slender, vesica with numerous cornuti, uncus and distal portions of valvae pilose.

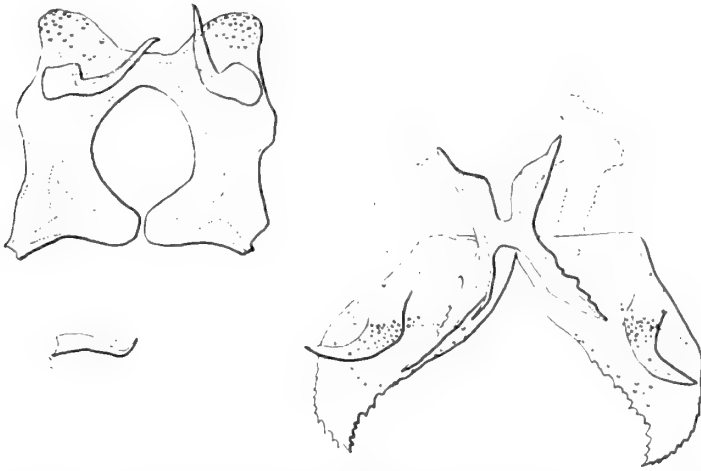


FIG. 181. *Castalius melaena melaena* (Trimen), ♂ genitalia, tegumen, penis (Delagoa Bay), valves (Rhodesia-Congo border).

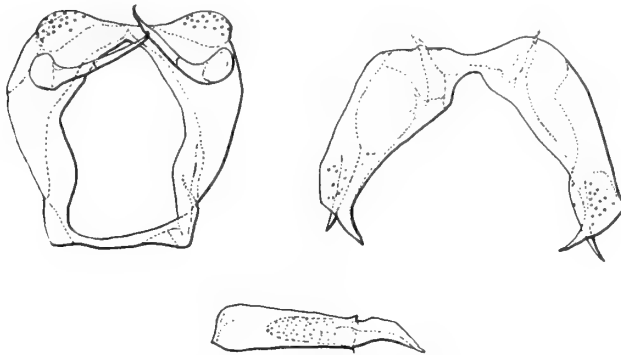


FIG. 182. *Castalius carana carana* (Hewitson), ♂ genitalia.

*C. ertli*. Male genitalia (Text-fig. 183) : uncus composed of two small flattened lobes fused to the tegumen ; subunci very long with massive bases, only slightly curved, tapering gradually to their apices ; tegumen strap-shaped ; vinculum wide above, narrow below ; lower fultura consists of a small spatulate lamella ; valves oblong, upper process folded under the lower one and ending in a slender point with serrated edges, lower process widely connected to the vinculum by a membrane and having a rounded apex ; penis of normal size and resembling that of *carana* ; uncus pilose, hairs on valves more numerous and longer than on the uncus.

*C. margaritaceus*. Male genitalia (Text-fig. 184) : uncus composed of two small oval lobes fused to the tegumen ; subunci long, almost straight, with massive bases and tapering gradually to their apices ; terminal margin of tegumen smoothly concave ; vinculum wide above, narrow below ; lower fultura consists of a small triangular lamella ; valves very large, the upper process, which is folded under the lower one, ending in a long sharp spinose point, the lower process strongly dentate, the shape of the teeth varying in individual specimens ; penis as in *carana* ; uncus and valves pilose.

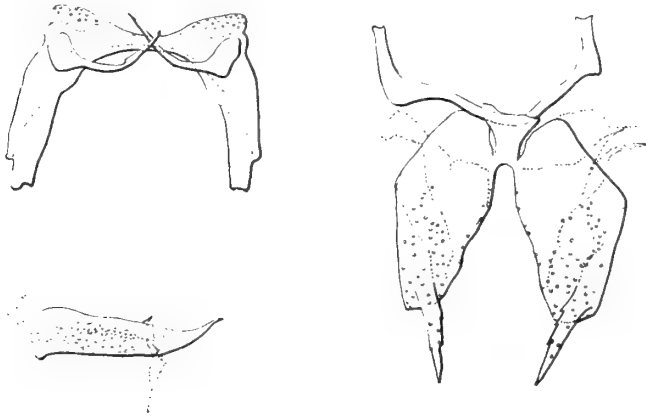


FIG. 183. *Castalius ertli* Aurivillius, ♂ genitalia.

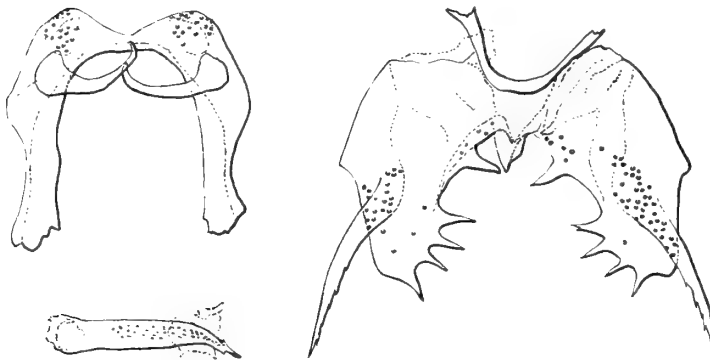


FIG. 184. *Castalius margaritaceus* Sharpe, ♂ genitalia.

Comparison of the genitalia of the above species with those of *rosimon*, can only lead to the conclusion that the Ethiopian species of *Castalius* have no true relationship with the type-species *rosimon*.

Besides *rosimon*, I have examined only four Indo-Malayan species, viz : *decidia* Hewitson, *ethion* Doubleday, *roxus* Godart and *elna* Hewitson. Their male genitalia also differ considerably from those of *rosimon* and they show no resemblance to the so-called *Castalius* of Africa.

Fruhstorfer (Seitz, 9 : 883) has already pointed out the great diversity that is found in the male genitalia of species of this genus and yet he considered that the genus *Castalius*, as he understood it, was a valid systematic group. I cannot agree with him. It is evident that the species of *Castalius* auct. do not constitute a natural genus, but that they form a heterogeneous collection of groups of species whose convergent characters are of minor importance, e.g. the type of venation, which is commonplace, and the undeniable similarity of external appearance, with the white ground-colour of the upperside more or less tinged with blue, and with black markings, and especially a strong black streak parallel to the costa on the underside of the fore wing. I do not consider that this black streak has any particular systematic value, being only a recurrent character found also in species of *Tarucus* and in *Azanus isis* Drury, which have genitalia very distinctive from those of *C. rosimon*. In my opinion, the generic name *Castalius* should be restricted to *rosimon* and its Indo-Malayan congeners, if there are any. The Ethiopian species should be divided into four groups, probably with the status of genera :—1. *hintza* ; 2. *calice*, *gregorii*, *cretosus* and *kaffana* ; 3. *melaena* and *griqua* ; 4. *carana*, *ertli* and *margaritaceus*. At present however, I refrain from naming these groups as genera, preferring to wait till the related Indo-Malayan species have received comprehensive treatment.

The early stages of *hintza* and *cretosus* have been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* 86 : 231-2) : for *hintza* see also Pinhey (1949 : 112).

LIST OF SPECIES OF *Castalius*

- Castalius analogramma* Bethune Baker, see *cretosus nodieri*.
- \**Castalius calice calice* (Hopffer), 1855. Fig. Hopffer, 1862.
- \**Castalius calice gregorii* Butler, 1894.
- Castalius calice* (Wallengren), nec Hopffer, see *melaena*.
- \**Castalius carana carana* (Hewitson), 1876.
- Castalius carana kontu* (Karsch), 1893. Fig. H. H. Druce, 1910.
- \**Castalius cretosus cretosus* Butler, 1876.
- Castalius cretosus lactinatus* Butler, 1886.
- Castalius cretosus nodieri* (Oberthur), 1883.
- analogramma* Bethune Baker, 1911.
- \**Castalius cretosus usemia* Neave, 1904.
- \**Castalius ertli* Aurivillius, 1907.
- \**Castalius hintza hintza* (Trimen), 1864. Fig. Trimen, 1887.
- rosimon* (Wallengren), 1857, nec Fabricius, 1775.
- Castalius hintza resplendens* Butler, 1876.

- \**Castalius kaffana* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 149, fig.  
 \**Castalius margaritaceus* E. Sharpe, 1892.  
*Castalius margaritaceus* f. *phasma* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 148, fig.  
 \**Castalius melaena melaena* (Trimen), 1887. Fig. Aurivillius in Seitz, 1924.  
*calice* (Wallengren), 1857 ; *melama* and *melas* Aurivillius ex errore Seitz : 467.  
 \**Castalius melaena griqua* Trimen, 1887.  
*Castalius melaena interruptus* Gabriel, 1954, *Exp. S.W. Arabia*, 1937/38 : 381.  
*Castalius melama* (Aurivillius), see *melaena*, 1924 : 467.  
*Castalius melas* (Aurivillius), see *melaena*.  
*Castalius rosimon* (Wallengren), see *hintza*.

### Genus *TARUCUS* Moore

*Tarucus* Moore, 1881, *Lep. Ceylon* **1** : 81 ; Bethune Baker, 1918 : 269-296 ; Swanepoel, 1953 : 65. Type-species : *Hesperia theophrastus* Fabricius, by original designation.  
*Cupido* Schrank (partim) ; Aurivillius, 1898 : 363 ; 1924 : 468.  
*Lycaena* Fabricius (partim) ; Murray, 1935 : 152.  
*Cacyreus* Butler (partim) ; Pinhey, 1949 : 119

*Eyes* glabrous, vertex clothed with white hair ; palpi long, strongly ascending, second segment long, laterally compressed, clothed with white erect scales, third segment slender, cylindrical, clothed with black scales (see Bethune Baker, 1917, pl. 20, figs 33-34) ; antennae slender, about three-fifths the length of the costa, club elongate, well differentiated ; thorax fairly robust, clothed below with long white hair ; ♂ fore leg, femur slightly flattened, tibia about as long as femur, tarsus unsegmented, black and white-annulated, spinose below.

*Wing shape.* Fore wing subtriangular, hind wing oval with a short filiform tail at the end of vein 2.

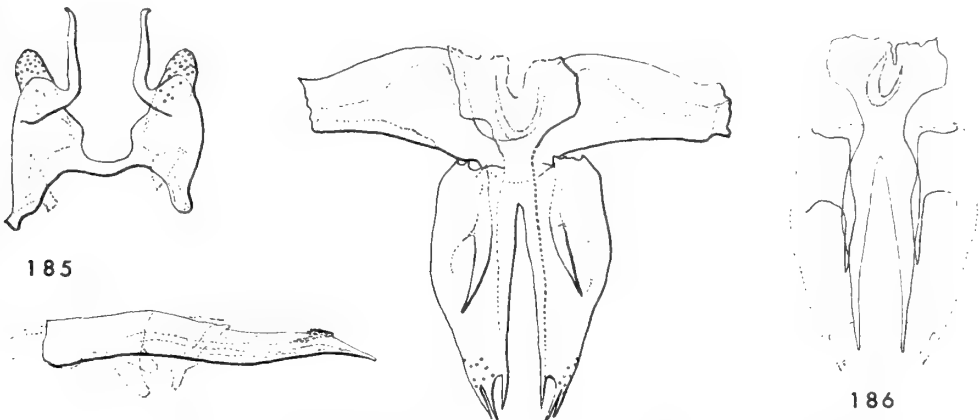
*Wing venation* (Text-fig. 326) : Fore wing with 11 veins, 11 curved, and touching 12 at one point in its length.

*Male genitalia* (Text-fig. 185). Uncus composed of two small lobes with rounded apices fused to the lateral angles of the tegumen ; subunci long, bent at right-angles, the basal part massive, the free arm tapering gradually to the claw-shaped apex ; tegumen rather large, the terminal margin deeply excised so as to leave only a narrow median band ; vinculum very wide above ; lower fultura peculiar in that the arms are enlarged to form wide curtains, which are fused to form a conical hood that passes above the penis, the apex of the cone directed towards the eighth abdominal segment (Bethune Baker gave the name "tectorius" to this structure) ; valves elongate with three sharp teeth of varying lengths at the apices, and bearing towards the base on the inner surface of the upper process a digitate, sharply pointed sclerite which runs parallel to the valve itself (the "virgae excitatae" of Bethune Baker) ; penis very elongate, sheathed by an anellus fused to the tectorius, tapering gradually in its external portion to the sharp pointed apex, vesica echinate ; uncus and apices of valves pilose.

Bethune Baker (1917: 271) has interpreted the structures of the male genitalia of the species of *Tarucus* in a way which differs from my own interpretation. Instead of considering the "tectorius" as a modification of the lower fultura, he considers that it is a peculiar vestigial organ, part of a primitive structure which consisted of two groups, one surrounding the anus, the other protecting the sexual organs. On

the other hand he admits that the "virgae excitatae" take the place of the furca of other species of Lampidinae. I cannot agree with this interpretation. I have for a long time studied the geographical distribution of *Tarucus* in the Ethiopian region and dissected very numerous male genitalia of species of this genus. Not content with single whole mounts, in side view, I have dissected out the parts and cut through the top of the tectorius to extract the penis. I have come to the conclusion that the tectorius is not an independent structure, not a second vinculum, but simply a prolongation of the lower process of the valves, as there is no suture between the two structures. In other African Lampidinae one comes across a similar fusion of the distal portions of the arms of the lower fultura, or at least a curtain-like expansion of its arms. In my opinion the virgae excitatae do not correspond to the furca; they are simply extensions of the valves originating at different levels according to the species, and furthermore they are not found in all species of *Tarucus*. In *theophrastus* the virgae excitatae (Text-fig. 186) arise from the upper process, in species of the *rosacea* group (*mediterraneae* Bethune Baker) they are fused to the lower process. The valves of some Ethiopian species of *Castalius* (e.g. *melaena* Trimen) also have sclerites comparable to the virgae excitatae of *Tarucus*. To illustrate my contention I have drawn in the accompanying diagram (Text-fig. 186) with solid lines the lower process of the valves, the tectorius (cut open at its apex) and the virgae excitatae, and have indicated the general outline of the valves by dotted lines. I believe that my interpretation of these structures in the genitalia of *Tarucus* is more tenable than that of Bethune Baker.

In accordance with his genitalia studies, Bethune Baker divided the species of *Tarucus* into four groups and he figured the male genitalia of all the species known in 1918, except those of *thespis* Linnaeus. As I have since illustrated the genitalia of all the species that I have described, figures are here given only of those species not yet illustrated.



FIGS 185-186. *Tarucus theophrastus* (Fabricius) ♂ genitalia. 185, Kantara ; 186, W. Darfur.

Group I : virgae excitatae well developed, fused to the lower process of the valve ; tectorius present.

*T. rosacea* Austaut ; Bethune Baker, 1918 : 282, pl. 16, fig. 7 ; Stempffer, 1943, *Annls Soc. ent. Fr.* **1942** : 121 ; fig. 2.

*T. balkanicus* Freyer ; Bethune Baker, 1918 : 278, pl. 15, fig. 3 ; Stempffer, 1943, *Annls Soc. ent. Fr.* **1942** : 121, fig. 3.

*T. legrasi* Stempffer, 1948, *Revue fr. Ent.* **15** : 195, fig. 4.

*T. kulala* Evans (Text-fig. 187).

The armature of *kulala* resembles that of *rosacea* except that the subunci are rather less robust and the valves narrower with the apex not bent back. *T. kulala* is certainly a distinct species, easily separated by the pattern of the underside.

Group II : Virgae excitatae absent, tectorius poorly developed.

*T. grammicus* Gr. Smith ; Bethune Baker, 1918 : 284, pl. 16, fig. 10.

*T. sybaris* Hopffer ; Bethune Baker, 1918 : 285, pl. 16, fig. 9.

*T. quadratus* Grant ; Bethune Baker, 1918 : 286, pl. 16, fig. 11.

Group III : Virgae excitatae fused to the upper process of the valve (*theophrastus*) or absent (*ungemachi*) ; tectorius well developed.

*T. theophrastus* Fabricius ; Bethune Baker, 1918 : 287, pl. 16, fig. 12 ; Stempffer, 1943, *Annls Soc. ent. Fr.* **1942** : 121, fig. 1.

*T. ungemachi* Stempffer, 1943 : 121, fig. 4.

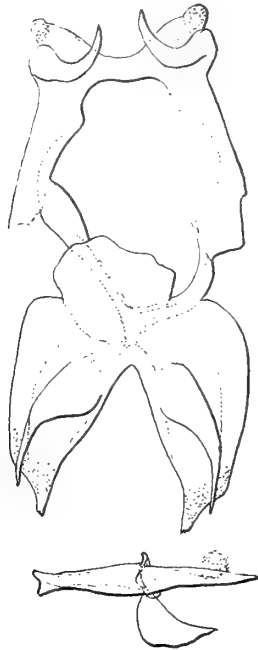


FIG. 187. *Tarucus kulala* Evans, ♂ genitalia.

Group IV : *virgae excitatae* absent, *tectorius* present, *uncus* and *subunci* well developed.

*T. bowkeri* Trimen ; Bethune Baker, 1918 : 295, pl. 17, fig. 15.

*T. thespis* L. ; Bethune Baker, 1918 : 296.

This fourth group of species departs rather markedly from the others. The venation differs slightly in that vein 11 of the fore wing is anastomosed with vein 12 for some distance, whereas in the other species the two veins only touch at a point. The external appearance is also different, the pattern of the underside being heavier ; in respect of the genitalia, in *thespis* (Text-fig. 188) the *uncus* consists of two narrow subtriangular lobes with rounded apices, the *subunci* are bent, very long and slender, with a terminal hook ; the *tegumen* is reduced to a narrow band, *vinculum* moderately broad above, narrow below, *tectorius* well developed, *valves* fusiform, very elongate, broadly fused to the *vinculum* and apically rounded ; *penis* elongate, very swollen at the level of the floor of the genital cavity, then suddenly narrowed and ending in a sharp point ; *vesica* shagreened in appearance ; lobes of the *uncus* and apices of the *valves* pilose.

The early stages of *T. rosacea* have been described by Chapman and Buxton (1919, *Entomologist's mon. Mag.* 55 : 163-173), those of *T. sybaris* by Murray (1935, 153), Gowan C. Clark (1942, *J. ent. Soc. sth. Afr.* 5 : 115-118), and Pinhey (1949, : 112) ; those of *T. thespis* by Dickson (1944, *J. ent. Soc. sth. Afr.* 7 : 20-29).

The caterpillars of *thespis* feed on species of Rhamnaceae, those of *rosacea* and *sybaris* on species of *Zizyphus*. In Europe *theophrastus* has been found on *Zizyphus vulgaris* Lam.

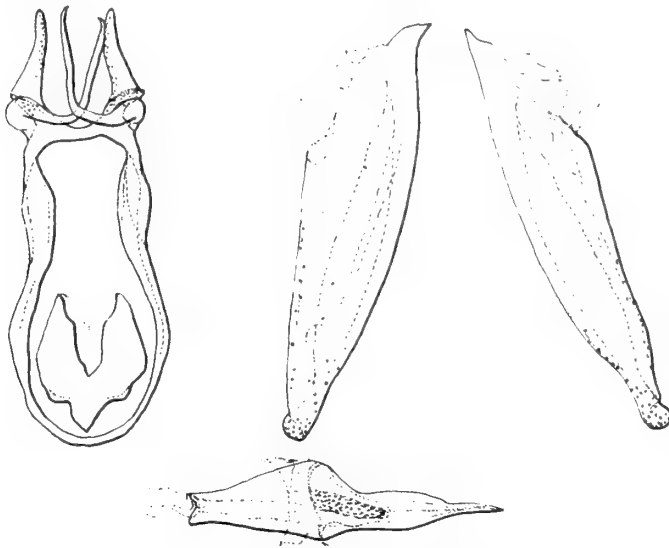


Fig. 188. *Tarucus thespis* (Linnaeus), ♂ genitalia.

The genus *Tarucus* includes several species which it is almost impossible to differentiate by their external appearance, but their male genitalia are distinctive enough to leave no doubt as to the validity of the species. It would be interesting to examine systematically the genitalia of all the specimens of *Tarucus* which are to be found in various collections so as to decide the habitats of the known species and possibly discover new species.

LIST OF SPECIES OF *Tarucus*

- \**Tarucus balkanicus* (Freyer), 1844.
- \**Tarucus bowkeri* (Trimen), 1883. Fig. Trimen, 1906.
- \**Tarucus grammicus* (Gr. Smith), 1893.  
*louisae* E. Sharpe, 1898.
- \**Tarucus kulala* Evans, 1955, *Entomologist* **88** : 185.
- \**Tarucus legrasi* Stempffer, 1948, *Revue fr. Ent.* **15** : 194, fig.  
*Tarucus louisae* E. Sharpe, see *grammicus*.
- Tarucus mediterraneae* Bethune Baker, see *rosacea*.
- Tarucus pitho* (Linnaeus), see *thespis*.
- \**Tarucus quadratus* Grant, 1899. Fig. Bethune Baker, 1918.
- \**Tarucus rosacea* (Austaut), 1885. Fig. Bethune Baker, 1918 (as *mediterraneae*).  
*mediterraneae* Bethune Baker, 1918.
- \**Tarucus sybaris sybaris* (Hopffer), 1855. Fig. Hopffer, 1862.
- \**Tarucus sybaris linearis* (Aurivillius), 1924.
- \**Tarucus theophrastus* (Fabricius), 1793.
- \**Tarucus thespis* (Linnaeus), 1764. Fig. Trimen, 1887.  
*pitho* (♀) (Linnaeus), 1764.
- \**Tarucus ungemachi* Stempffer, 1943, *Annls Soc. ent. Fr.* **1942** : 121, fig.

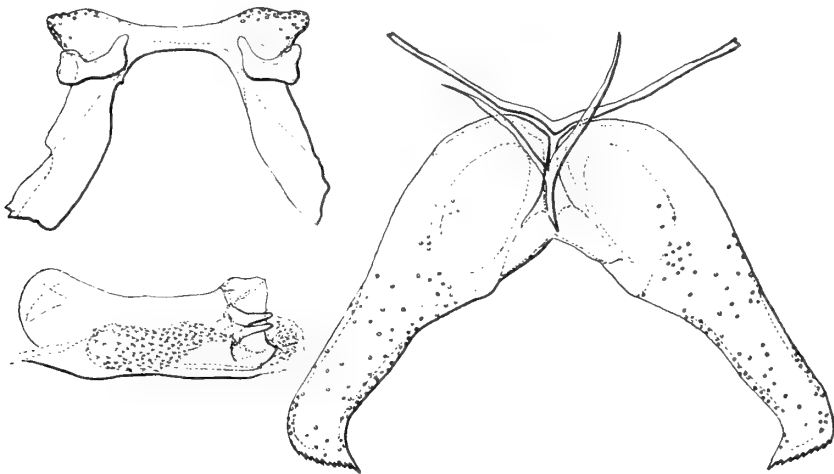


FIG. 189. *Lampides boeticus* (Linnaeus), ♂ genitalia.



Genus *LAMPIDES* Hübner

*Lampides* Hübner, 1819, *Verz. bek. Schmett* (5) 70 ; Pinhey, 1949 : 115 ; Swanepoel, 1953 : 82.

Type-species : *Papilio boeticus* Linnaeus, by selection of Grote (1873, *Bull. Buffalo Soc. nat. Sci.* **3** : 179).

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 367 ; 1924 : 471.

*Lycaena* Fabricius (partim) ; Murray, 1945 : 161.

*Eyes* clothed with long dense hair ; palpi long, ascending, second segment very long, laterally compressed, clothed below with close-set long white scales and with a row of long stiff black hairs, third segment short, horizontal, with blunt apex ; antennae slender, white-annulated, a little longer than half the length of the costa, club elongate, clavate ; thorax robust, clothed below with long white hair ; ♂ fore leg, femur clothed with very long white hair, tibia shorter than femur, tarsus unsegmented.

*Wing shape.* Fore wing triangular, outer margin slightly convex, hind wing oval, with a filiform tail at the end of vein 2.

*Wing venation* (Text-fig. 327). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 189). Uncus composed of two subtriangular lobes with rounded apices fused to the lateral angles of the tegumen, subunci short, flattened into lamellae, slightly curved, apices blunt ; tegumen reduced to a narrow median band, vinculum wide above, very narrow below, no saccus ; lower fultura Y-shaped, with long slender arms ; valves oblong with broad bases and serrated apices which are slightly recurved ; penis short, massive, apical part with two short blunt-ended processes which are probably homologous with the carina of the penis of *Syntarucus* ; vesica armed with numerous cornuti ; uncus and distal halves of valves pilose.

The early stages of *boeticus* have often been described :—Murray (1935 : 162) ; Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 234) ; Dickson, C. G. E., (1944, *J. ent. Soc. sth. Afr.* **7** : 96 ; 1945, **8** : 150 ; and 1947, **10** : 127) ; Pinhey, (1949 : 117). As in Europe the caterpillar is polyphagous and lives in the pods of many wild and cultivated species of Leguminosae.

LIST OF SPECIES OF *Lampides*

\**Lampides boeticus* (L.), 1767.

Genus *CYCLYRIUS* Butler

*Cyclyrus* Butler, 1897, *Proc. zool. Soc. Lond.* 1896 : 830. Type-species : *Polyommatus webbianus*

Brulle (species restricted to the Canary Islands), by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1924 : 471.

*Eyes* densely clothed with fairly long hair ; palpi long, ascending, second segment long, laterally compressed, clothed above and below with white scales and below also bearing long black stiff hairs, third segment rather short, slender, acuminate and clothed with black scales ; antennae slender, about three-fifths the length of the costa, club elongate clavate, well differentiated ; thorax fairly robust, clothed below with white hair ; ♂ fore leg, tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex angular, hind wing oval, no tail.

*Wing venation* (Text-fig. 328). Fore wing with 11 veins, 11 runs close to 12 but does not touch it.

*Male genitalia* (Text-fig. 190) (see also Stempffer, 1938, *Mission Omo* **4** : 201, fig. 23) : Uncus composed of two small lobes narrowly fused to the tegumen on either side of its median con-

cavity ; subunci rather short, almost straight, tapering gradually from their base to the blunt apices ; tegumen reduced to a rather narrow median strip ; vinculum wide above, narrow below ; lower fultura consisting of two slender curved arms arising from the base of the valves ; valves oblong, proximal portion oval, apex serrated, the size of the teeth increasing gradually from the upper to the lower process, the lower edge deeply excised near the apex ; penis of the same structure as in the genus *Syntarucus*, i.e. short, massive with carina penis and cuneus, the latter bifid ; uncus and lower processes of valves pilose.

As can be seen by comparing figures, the male genitalia of *C. webbianus* are closely analogous to those of Ethiopian *Syntarucus* and American *Leptotes*.

In his generic description, Butler included in *Cyclus* the species *aequatorialis* Sharpe and *juno* Butler ; Aurivillius (1924 : 471-473) also included in what he called the *Cyclus* group, *tsomo* Trimen, *noquasa* Trimen, *kisaba* Joicey & Talbot, *notobia* Trimen and *crawshayi* Butler. Later on other species or subspecies were placed in this genus by other authors, viz : *boma* Bethune Baker, *ruandensis* Joicey & Talbot, *vulcanica* Joicey & Talbot, *marungensis* Joicey & Talbot, *wollastoni* Bethune Baker and *major* Joicey & Talbot.

I have examined the male genitalia of all these species or subspecies. As I have shown (1943, *Annls Soc. ent. Fr.* 1942 : 125) they have nothing in common with those of *C. webbianus* ; *crawshayi* is a *Euchrysops* (Stempffer, 1938, *Mission Omo* 4 : 204, fig. 26) and all the others belong to the genus *Harpendingyreus*. They must be excluded from the genus *Cyclus*, which they resemble only fortuitously and in the markings on the underside of the hind wing.

On the other hand *mandersi* H. H. Druce, from Mauritius, described as a *Nacaduba*, is a true *Cyclus* not only in its venation but also in its male genitalia, of which I give a drawing (Text-fig. 191) : it is true that the subunci are finely spinose, but the penis has the highly characteristic form of *Cyclus*, *Syntarucus* and *Leptotes*. It seems impossible to have any doubts as to the close relationship of these three genera

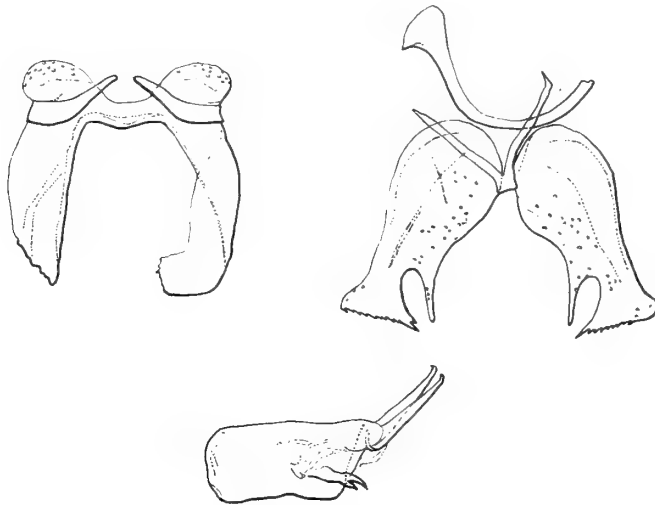


FIG. 190. *Cyclus webbianus* (Brullé), ♂ genitalia.

and of their common ancestry. They are rare examples amongst Lycaenidae, of a stock common to Indo-Malaysia, Africa and to sonoran and neotropical America. This interesting fact had already been noted by Seitz, who (1937, *Macrolep. World* 5 : 739) writes " By this, however, we cannot explain other symptoms, such as the occurrence of otherwise African genera on the high ridge of the Andes (genus *Cyclus* Butler) ". It is interesting to note that whereas the underside markings of *Leptotes cassius* Cramer, *L. theonus* Lucas and *L. marina* Reakirt recall species of *Syntarucus*, those of *Leptotes callanga* Dyar and *L. andicola* Godman & Salvin are much more like those of *C. webbianus*.

The early stages of *C. mandersi* have been described by Manders (1908, *Trans. ent. Soc. Lond.* 1907 : 446).

LIST OF SPECIES OF *Cyclus*

\**Cyclus mandersi* (H. H. Druce), 1907.

\**Cyclus webbianus* (Brulle), 1850 (palaeartic species : Canary Isles).

Genus **SYNTARUCUS** Butler

*Syntarucus* Butler, 1900, *Proc. zool. Soc. Lond.* : 929 ; Pinhey, 1949 : 115 ; Swanepoel, 1953 : 8.

Type-species : *Papilio piriethous* L., 1767 (*Papilio telicanus* Lang, 1789), by monotypy.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 364 ; 1924 : 470.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 189.

Eyes densely pilose ; vertex clothed with erect black hair ; palpi long, ascending, second segment long, laterally compressed, clothed beneath with long stiff white and black hair, third segment slender, acuminate ; antennae slender, a little longer than half the length of the costa,

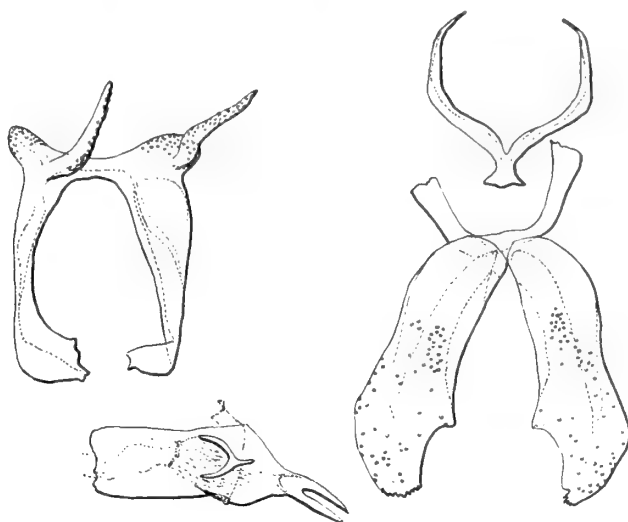


FIG. 191. *Cyclus mandersi* (Druce), ♂ genitalia.

club oval, flattened, well differentiated, thorax moderately robust, clothed below with long white silky hair ; ♂ fore leg, tibia shorter than femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex angular, outer margin slightly convex ; hind wing oval, with a short filiform tail at the end of vein 2, anal angle not well marked.

*Wing venation* (Text-fig. 329). Fore wing with 11 veins, 11 approximate to but not touching vein 12.

*Male genitalia* (Text-fig. 192). Uncus composed of two small oval lobes narrowly fused to the posterior margin of the tegumen ; subunci long, slightly curved, tapering gradually to blunt apices, not unguiculate ; tegumen reduced to a narrow median band of which the posterior margin is roundly concave ; the rather wide upper part of the vinculum bent at right angles to the narrow lower portion ; lower fultura composed of two slender curved arms fused together at their base and attached to the base of the valves ; valves suboval ending in a long curved point which bears a small tooth on its inner edge ; penis short, massive in its internal portion ; vesica enclosing a large hook-shaped cornutus (cuneus of Stitz) : the external portion of the penis ends in two long sharp points curved towards the ventral surface (carina penis of Petersen). During the act of copulation the pars inflabilis, accompanied by the cuneus, is unsheathed and passes above (not between) the points of the carina penis ; uncus and distal portions of valves pilose.

In 1935 (*Mission Omo 2* : 219, 240) I published a revision of the African species of *Syntarucus*, in which I showed that *Syntarucus plinius* Fabricius, often recorded from Africa by various authors, was in fact an exclusively Indo-Malaysian species, but that, on the other hand there existed in Africa other very common species, which till then had been confused with *pirithous*, all of which had conspicuously different genitalia. Since then Tite (1958, *Entomologist 19* : 189) has isolated three other species.

The male genitalia of all species resemble those of *pirithous*, though the subunci and the valves supply excellent specific characters which allow one to determine the species rapidly and accurately, in contrast to their external appearances which are

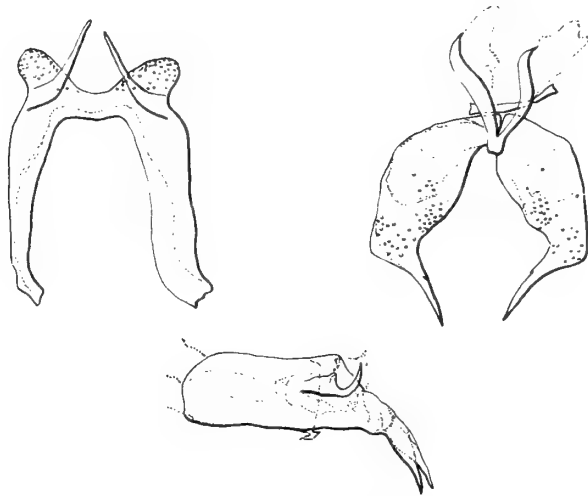


FIG. 192. *Syntarucus pirithous* (Linnaeus), ♂ genitalia.

confusing. The penis of all has the same characteristic form and has the carina penis and cuneus typical of the genus. References to figures of genitalia are included in the list of species given below.

It is worth noting that, whereas most of the species of *Syntarucus* are widespread throughout Africa and often found flying together, five have very restricted distributions. These are *S. socotranus*, found only on Sokotra, *S. rabefaner*, restricted to Madagascar, *S. terrenus* in São Thomé and *mayottensis* and *casca* of the Comoro Islands. In the description of *Cyclus* I have already called attention to the close affinities existing between that genus and *Syntarucus* and the American genus *Leptotes*.

The early stages of *pirithous* have been described by Murray (1935 : 190). In S. Africa the caterpillar feeds on various species of Leguminosae, e.g. *Plumbago capensis*, *Burkea africana*, *Indigofera* spp., *Mundulea sericea* and *Medicago sativa* L. (Leguminosae). Recently Mr. K. M. Pennington has informed me that at Delagoa Bay the caterpillar of *pulcher* feeds on *Sesbania sesban*.

LIST OF SPECIES OF *Syntarucus*

- \**Syntarucus babaulti* Stempffer, 1935, *Mission Omo* 4 : 235, fig. and fig. genitalia.
- \**Syntarucus brevidentatus* Tite, 1958, *Entomologist* 91 : 189, fig. and fig. genitalia.
- \**Syntarucus casca* Tite, 1958, *Entomologist* 91 : 190, fig. and fig. genitalia.
- \**Syntarucus jeanneli* Stempffer, 1935, *Mission Omo* 4 : 232, fig. and fig. genitalia.
- \**Syntarucus marginalis* (Aurivillius), 1924. Fig. genitalia, Stempffer, 1935, *Mission Omo* 4.
- \**Syntarucus mayottensis* Tite, 1958, *Entomologist* 91 : 191, fig. and fig. genitalia.
- \**Syntarucus pirithous pirithous* (Linnaeus), 1767. Fig. Gerhard, 1853. Fig. genitalia, Stempffer, 1935, *Mission Omo* 4.
- telicanus* (Lang), 1789.
- Syntarucus pirithous insulanus* (Aurivillius), 1909.
- \**Syntarucus pulcher* (Murray), 1874. Fig. genitalia, Stempffer, 1935, *Mission Omo* 4.
- \**Syntarucus rabefaner* (Mabille), 1877. Fig. and fig. genitalia, Stempffer, 1935.
- \**Syntarucus socotranus* (Grant), 1899. Fig. and fig. genitalia, Stempffer, 1935.
- Syntarucus telicanus* (Lang), see *pirithous*.
- Syntarucus terrenus* Joicey & Talbot, 1926, *Entomologist* 59 : 224.

Genus **HARPENDYREUS** Heron

*Harpencyreus* Heron, 1909, *Trans. zool. Soc. Lond.* 19 : 158 ; Swanepoel, 1935 : 72. Type-species : *Harpencyreus reginaldi* Heron, by monotypy.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 368 ; 1924 : 462, 472.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 162, 185.

Eyes densely clothed with long hair ; palpi long, ascending, second segment long, laterally compressed, clothed above with black scales, below with white scales and long stiff black hair,

third segment slender, acuminate, clothed with white scales on the inside and black scales on the outside ; antennae slender, about three-fifths the length of the costa, club oval, flattened, well differentiated ; thorax fairly robust, clothed below with long silky hair ; ♂ fore leg, femur clothed with long grey hair, tibia slightly shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex angular margin convex, hind wing oval, no tail, anal angle rounded.

*Wing venation* (Text-fig. 330). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 193). Uncus composed of two oval lobes fused to the posterior edge of the tegumen, each lobe bearing near its apex a small prominent tubercle crowned with long strong stiff bristles (N.B. as this tubercle is rather soft, it is easily displaced when the genitalia are mounted ; sometimes it is pushed sideways as in the case in the figure, sometimes it is pushed upwards, projecting above the posterior margin of the tegumen so that it is difficult to prepare mounts that are strictly comparable in respect of all details) ; subunci long, slender, curving, tapering gradually from the base to the pointed apex which bears a wide-open claw ; tegumen very large, prolonged towards the eighth abdominal segment by a wide rounded expansion ; vinculum narrow, almost at right-angles to the tegumen when seen in side view, lower fultura composed of two long curved arms fused together at their bases and arising from the origin of the valves ; valves oblong, their general shape reminding one of a human leg including calf, ankle and foot, the internal surface bearing near its base a small protuberance which possibly corresponds to a connection between the valves and the tergal elements of the genitalia ; penis short, massive, vesica with numerous cornuti ; uncus densely clothed with long fine hair, distal portion of the valves sparsely clothed with short hairs.

The male genitalia of all the species or subspecies of *Harpendyreus* examined are of the same type as those of *H. reginaldi* except those of *H. notobia* (see below). Their specific characters are found mainly in the shape of the valves, but these

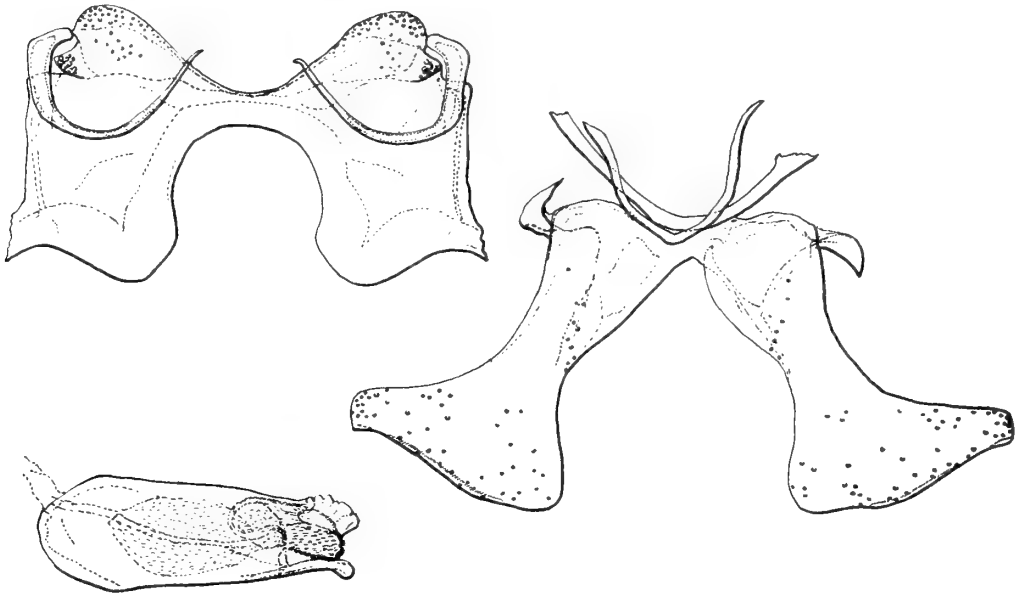


FIG. 193. *Harpendyreus reginaldi* Heron, ♂ genitalia.

characters are sometimes so poorly defined that it is difficult to decide whether one is dealing with a distinct species, a geographical race or even an individual variation. The species can be grouped according to variation in the valves, but as in certain species I had only a few specimens for dissection, I cannot rest satisfied with such an arrangement. To illustrate what I mean I give a figure (Text-fig. 194) of the male genitalia of *major*, which had been described as a subspecies of *noquasa*, but which is certainly a valid species.

*H. notobia* Trimen (Text-fig. 195). In this species uncus, subunci, tegumen and penis are of the same type as in *reginaldi*, but the two arms of the lower fultura are strongly curved and their apices are connected by a membrane which forms a complete ring around the penis, and the valves are very long, digitate, without any distal widening.

Judging by their male genitalia the species of *Harpendyreus* form a homogeneous genus. The markings on the underside of the hind wing of *reginaldi* remind one of *Uranothauma antinorii* Oberthur. All the other species have a white transverse streak, more or less pronounced, like the one in *Cyclyrius webbianus* and it is this trivial unimportant character that led some authors to include them, rather arbitrarily, in the genus *Cyclyrius*.

In Eastern Africa *Harpendyreus* is distributed from Kivu, Ruanda and Ruwenzori to Natal, Transvaal, Basutoland and the Cape, but it is discontinuous, the various scattered species and subspecies being restricted to specific mountain masses, though clearly having a common origin.

The early stages of *notobia* and *noquasa* have been described by Murray (1935 : 163, 186).

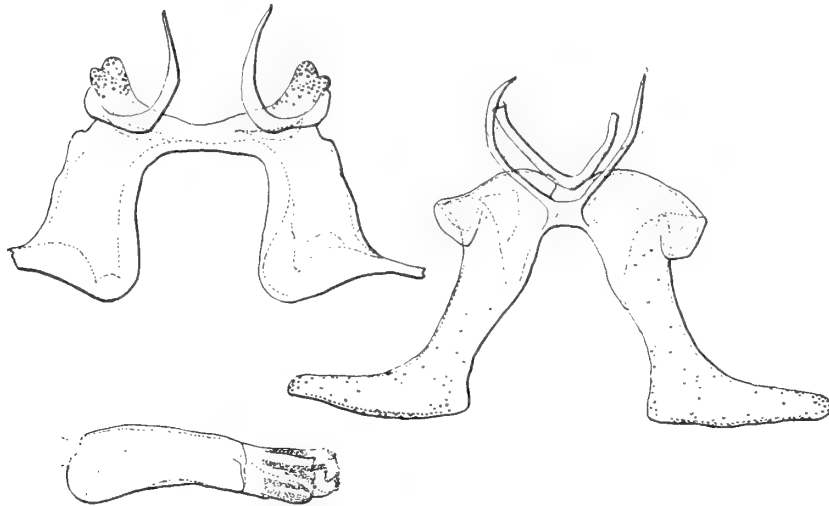


FIG. 194. *Harpendyreus major* (Joicey & Talbot), ♂ genitalia.

LIST OF SPECIES OF *Harpendyreus*

- \**Harpendyreus aequatorialis aequatorialis* (Sharpe), 1892. Fig. genitalia, Stempffer, 1938, *Mission Omo* 4 : 202.
- \**Harpendyreus aequatorialis sharpiae* (Butler), 1900.
- \**Harpendyreus aequatorialis vulcanica* (Joicey & Talbot), 1924, *Bull. Hill Mus. Witley* 1 : 547.
- \**Harpendyreus argenteostriata* Stempffer, 1961 : 65, fig. and fig. genitalia.
- \**Harpendyreus juno juno* (Butler), 1897.
- \**Harpendyreus juno boma* (Bethune Baker), 1926, *Ann. Mag. nat. Hist.* (9) 17 : 402.
- \**Harpendyreus major* (Joicey & Talbot), 1924, *Bull. Hill Mus. Witley* 1 : 548.
- \**Harpendyreus marlieri* Stempffer, 1961 : 64, fig. and fig. genitalia.
- \**Harpendyreus marungensis marungensis* (Joicey & Talbot), 1924, *Bull. Hill Mus. Witley* 1 : 547.
- \**Harpendyreus marungensis wollastoni* (Bethune Baker), 1926, *Ann. Mag. nat. Hist.* (9) 17 : 402. Fig. Gabriel, 1939, Ruwenzori Exp.
- \**Harpendyreus meruanus meruanus* (Aurivillius), 1910.
- \**Harpendyreus meruanus kisaba* (Joicey & Talbot), 1921.
- \**Harpendyreus meraunus ruandensis* (Joicey & Talbot), 1924, *Bull. Hill Mus. Witley* 1 : 548.
- \**Harpendyreus notobia* (Trimen), 1868. Fig. Trimen, 1887.
- \**Harpendyreus reginaldi* Heron, 1909. Fig. Gabriel, 1939.
- \**Harpendyreus tsomo tsomo* (Trimen), 1868. Fig. Trimen, 1887.
- \**Harpendyreus tsomo noquasa* (Trimen), 1887. Fig. Butler, 1898.

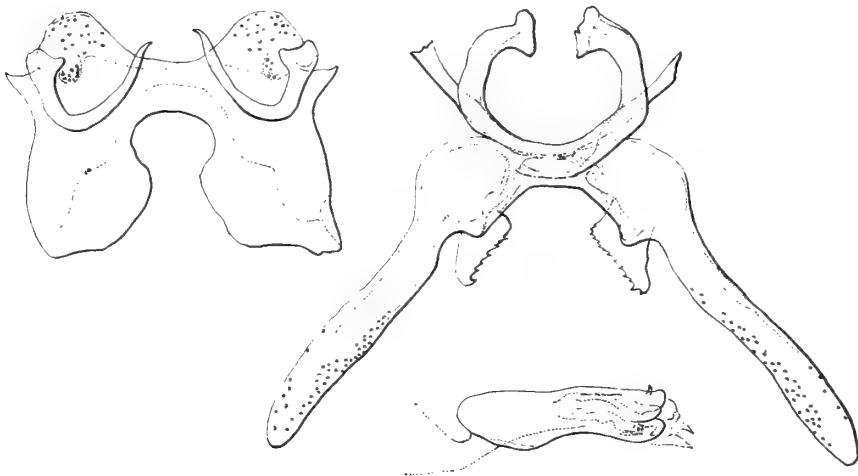


FIG. 195. *Harpendyreus notobia* (Trimen), ♂ genitalia.



Genus *PSEUDONACADUBA* Stempffer

*Pseudonacaduba* Stempffer, 1943, *Ann. Soc. ent. Fr.* **1942** : 130 ; Pinhey, 1949 : 186 ; Swanepoel, 1953 : 77. Type-species : *Lycaena aethiops* Mabille, by original designation.

*Cupido* Schrank (partim) ; Aurivillius 1898 : 367 ; 1925 : 471.

*Eyes* densely pilose ; frons black with two narrow white lateral lines ; palpi long, ascending, second segment long, laterally compressed, clothed below with long erect bristles, third segment fairly long, very slender, ending in a pointed apex ; antennae slender, about three-fifths the length of the costa ; club flattened, well differentiated ; ♂ fore leg, femur clothed with long grey hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex angular, outer margin convex ; hind wing oval, no tail, anal angle well marked.

*Wing venation* (Text-fig. 331). Fore wing with 11 veins ; 11 bent and confluent with 12 for part of its length.

*Male genitalia* (Text-fig. 196). Uncus crescentic with sharp pointed horns, thin in the median region ; subunci very robust, bent close to their massive base and bearing a distinct apical hook ; tegumen fairly large, its lateral margin markedly tooth-shaped ; vinculum broad, with a long slender saccus ; lower fultura consists of two divergent arms ; valves oblong with rounded apices fused together by their lower edges in the basal half ; penis elongate, gradually tapering in its internal portion, slightly dilated in its external portion, which ends in a sharp point, the meatus runs almost along its whole length and its edges bear spinules in its apical part ; uncus and apices of valves long pilose.

In *Pseudonacaduba sichela* the male genitalia (Text-fig. 197) resemble those of *aethiops* except that the apices of the uncus, instead of tapering to a point, are crowned with a kind of volute ending in a hook, the subunci are shorter, and the valves more widely fused together, and with an obliquely truncated apex. In the figure the vesica, bearing fine cornuti, is exerted.

Karsch (1895, *Ent. Nachr.*, **21** : 297) placed *sichela* in the genus *Orthomiella* de Nicéville. Aurivillius (1898 : 357), followed by most other authors of faunistic papers, included *aethiops* and *sichela* in the genus *Nacaduba* Moore.

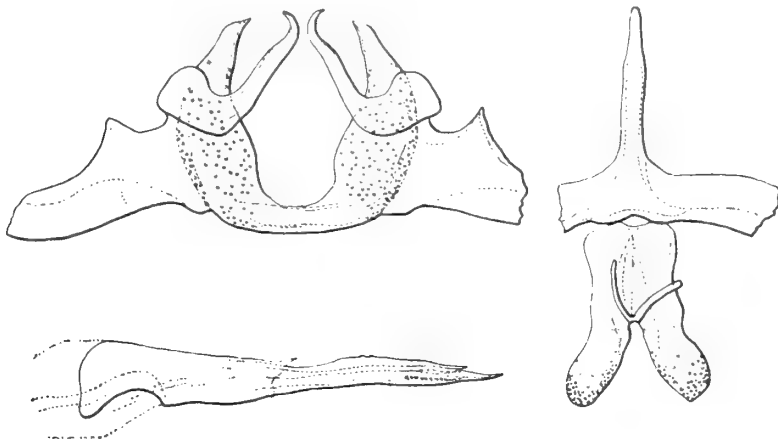


FIG. 196. *Pseudonacaduba aethiops* (Mabille), ♂ genitalia.

I have compared the genitalia of *aethiops* and *sichela* with those of *Orthomiella pontis sinensis* and *O.p. rovorea* and several species of oriental *Nacaduba*. They had no similarity, and for this reason I erected the genus *Pseudonacaduba*.

In 1938 (*Trans. R. ent. Soc. Lond.* **1938** : 125, 146) Corbet published a revision of of the Malayan species of the *Nacaduba* group, in which he stated "The genus *Petrelaea* Toxopeus (1929, *Tijds. Ent.* **72** : 242), type *Petrelaea dana varia* Toxopeus (1929) . . . includes *P. dana* de Nicéville and certain African forms in the *sichela* group".

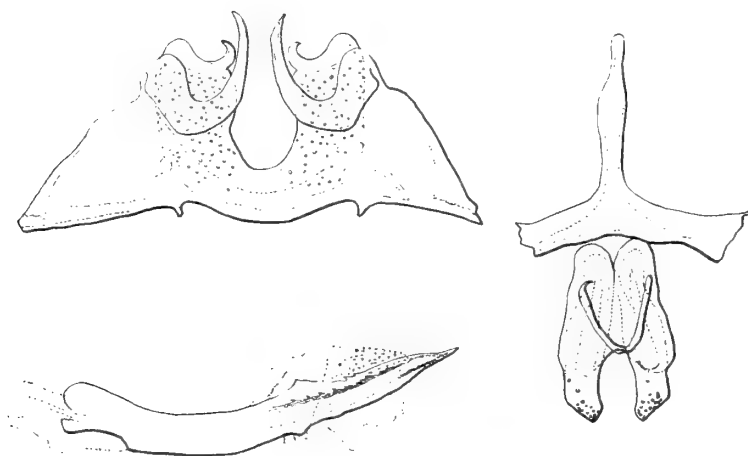


FIG. 197. *Pseudonacaduba sichela* (Wallengren), ♂ genitalia.

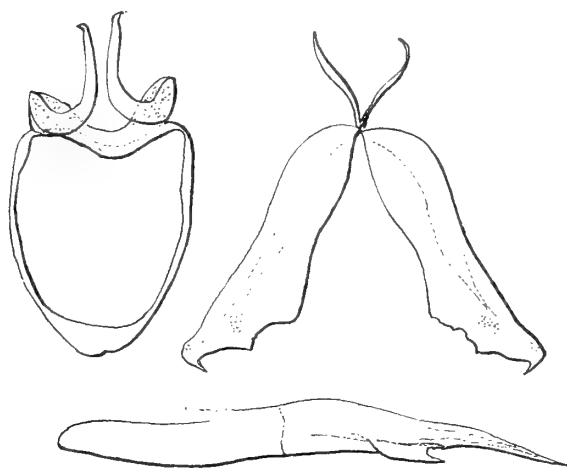


FIG. 198. *Petrelaea dana dana* (de Nicéville), ♂ genitalia.

At that time, having no material of *P. dana*, I accepted Corbet's opinion. Since then, I have been able to dissect three males from the British Museum (N.H.) and to figure the male genitalia (Text-fig. 198). A glance at this figure will show they bear little resemblance to the genitalia of *sichela*: the uncus is much simpler, the vinculum very narrow and devoid of a saccus; the valves bigger and well separated, and the penis disproportionately large in relation to the dorsal structures. I consider therefore that there is good reason to retain the genus *Pseudonacaduba* for the two African species in spite of the undeniable superficial resemblance between *dana* and *sichela*.

LIST OF SPECIES OF *Pseudonacaduba*

- \****Pseudonacaduba aethiops*** (Mabille). Fig. Aurivillius in Seitz, 1925.  
*melania* (Capronnier), 1889; *stratola* (Holland), 1891.
- Pseudonacaduba dexamene*** (Druce), see *sichela*.
- Pseudonacaduba docilis*** (Butler), see *sichela*.
- Pseudonacaduba melania*** (Capronnier), see *aethiops*.
- \****Pseudonacaduba sichela sichela*** (Wallengren) 1857. Fig. Aurivillius in Seitz, 1925.  
*dexamene* (Druce), 1887; *docilis* (Butler), 1888.
- Pseudonacaduba sichela reticulum*** (Mabille), 1877. Fig. Mabille, 1885: 87.
- Pseudonacaduba stratola*** (Holland), see *aethiops*.

Genus **LEPIDOCHRYSOPS** Hedicke

*Lepidochrysops* Hedicke, 1923, *Dt. ent. Z.* **1923**: 226 (nom. nov. pro *Neochrysops* Bethune Baker, 1923, nec Szilady, 1922); Pinhey, 1949: 117; Swanepoel, 1953: 89, 112. Type-species: *Papilio plebeius ruralis parsimon* Fabricius, through Art. 67 (i) of Int. Com. zool. Nomenclature (replacement name).

*Neochrysops* Bethune Baker, 1923 (invalid junior homonym).  
*Cupido* Schrank (partim); Aurivillius, 1898, 372; 1927: 479 et seq.  
*Lycaena* Fabricius (partim); Murray, 1935: 164 et seq.  
*Catochrysops* auct. plur., nec Boisduval, 1832.

*Head* rather small; eyes rather densely covered with short hair; palpi of medium size, second segment rather long, laterally compressed, clothed with white scales and some black bristles near the apex, third segment rather short, slender, acuminate; antennae slender, more than half the length of the costa, club elongate; thorax robust, clothed below with white silky hair; ♂ fore leg, femur pilose, tibiae as long as the femur, tarsus unsegmented, finely spinose below; mid and hind legs with a pair of short spurs at the apex of the tibia close to the metatarsus.

*Wing shape*. Fore wing subtriangular, apex angular, outer margin very slightly convex; hind wing oval, tailless in *parsimon*, but tailed in most species.

*Wing venation* (Text-fig. 332). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 199). Uncus composed of two small lobes ("cheeks" of Bethune Baker) fused to the lateral angles of the tegumen; subunci long, curving, tapering gradually to the apex; tegumen consists of a median strip excised on its posterior edge; vinculum fairly wide; lower fultura comprising two small divergent arms fused to the base of the valves, and

a conical anellus fused to and sheathing the penis completely ; valves very elongate with suboval bases, each valve being slightly dilated near its apex, which is recurved in the form of a short hook with slightly serrated lower edge ; penis elongate, subcylindrical the tip slightly dilated ovoid and divided ; vesica with fine cornuti ; uncus, anterior edge of tegumen, lower edge and upper portions of the valves all pilose.

Although the genus *Lepidochrysops* contains a large number of species, the male genitalia are remarkably uniform throughout the genus. Three species alone, *niobe*, *lacrimosa* and *ariadne* differ in having shorter, wider valves and the apex of the penis distinctly hook-shaped. The genitalia of some species differ so slightly from one another that it is difficult to determine them by their genitalia alone. This situation is complicated further by the fact that the apices of the valves vary considerably in individuals of the same species (Text-fig. 200, *L. methymna* valves) and are sometimes asymmetrical. Bethune Baker (1923) described and illustrated the genitalia of a large number of species. References to these are to be found below.

The early stages of the following species have been described. *L. procera* and *L. patricia* by Murray (1935 : 167, 172) ; *L. puncticilia*, *L. bacchus* and *L. ortygia* by Dickson (*J. ent. Soc. sth. Afr.* 1945, **7** : 150 ; 1947, **9** : 127) ; *L. asteris*, *L. nisbe* and *L. ariadne* by Pennington (*J. ent. Soc. sth. Afr.* 1946, **8** : 23, 24).

#### LIST OF SPECIES OF *Lepidochrysops*

*Lepidochrysops acholi* (Bethune Baker), see *victoriae*.

\**Lepidochrysops aethiopia* (Bethune Baker), 1923, fig. and fig. genitalia.  
*nyasae* (Bethune Baker) 1923, fig.

*Lepidochrysops albilinea* Tite, 1959, *Entomologist* **92** : 159, fig.

*Lepidochrysops ansorgei* Tite, 1959 : 160.

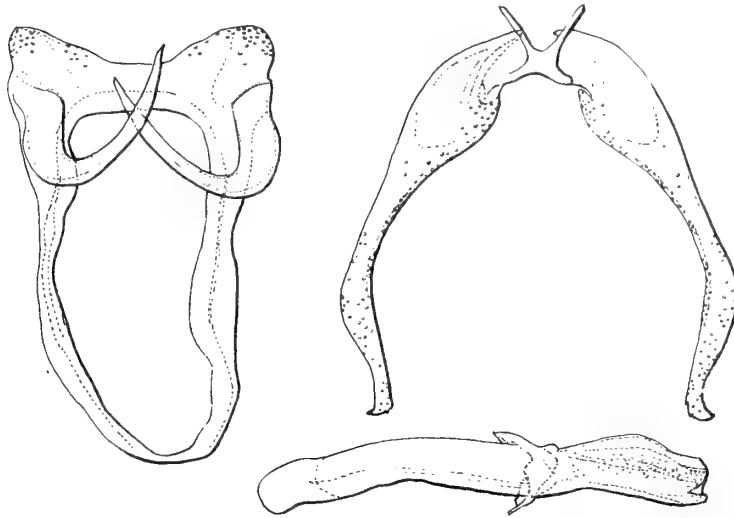


FIG. 199. *Lepidochrysops parsimon parsimon* (Fabricius), ♂ genitalia.

- Lepidochrysops arabicus* Gabriel, 1954, *S.W. Arabia Exp.* 1937-38 : 379, fig.
- \**Lepidochrysops ariadne* (Butler), 1898. Fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops asteris* (Godart), 1824. Fig. genitalia, Bethune Baker, 1923.  
*celaeus* (Trimen) (in part), 1866 ; *caffrariae* (Trimen), 1887.
- Lepidochrysops asteris* (Trimen) (in part), see *ortygia*.
- \**Lepidochrysops australis* Tite, 1964, *Entomologist* 97 : 6, fig. genitalia.  
*ortygia* Trimen, 1887 (in part).
- \**Lepidochrysops azureus* (Butler), 1879. Fig. Mabilie, 1885-1887.
- \**Lepidochrysops bacchus* Riley, 1938, *Trans. R. ent. Soc. Lond.* 87 : 243, fig.
- Lepidochrysops badhami* van Son, 1956, *Ann. Transv. Mus.* 22 : 508.
- Lepidochrysops barnesi* Pennington, 1953, *J. ent. Soc. sth. Afr.* 16 : 108, fig.
- Lepidochrysops brabo* (Hulstaert) see *skotios*.
- \**Lepidochrysops budama* van Someren, 1957, *J. ent. Soc. sth. Afr.* 20 : 65, fig.
- Lepidochrysops butha* (Strand), 1911.
- Lepidochrysops caerulea* Tite, 1961, *Entomologist* 94 : 21, fig.
- Lepidochrysops caffrariae* (Trimen), see *asteris*.
- Lepidochrysops carsoni* (Butler). Fig. and fig. genitalia, Bethune Baker, 1923.
- Lepidochrysops celaeus* (Cramer), see *parsimon*.
- Lepidochrysops celaeus* (Trimen), see in parte *asteris* and *trimeni*.
- \**Lepidochrysops chloauges* (Bethune Baker), 1923. Fig. and fig. genitalia,  
Bethune Baker, 1923.
- \**Lepidochrysops cinerea cinerea* (Bethune Baker), 1923. Fig. and fig. genitalia,  
Bethune Baker, 1923.  
*menna* (Hulstaert), 1924 ; *theodota* (Hulstaert), 1924.
- \**Lepidochrysops cinerea kitale* (Stempffer), 1937, *Bull. Soc. ent. Fr.* 42 : 284.
- Lepidochrysops cinerea lunulifer* (Ungemach), 1932, *Mem. Soc. Sci. nat. Phys. Maroc* 32 : 92.

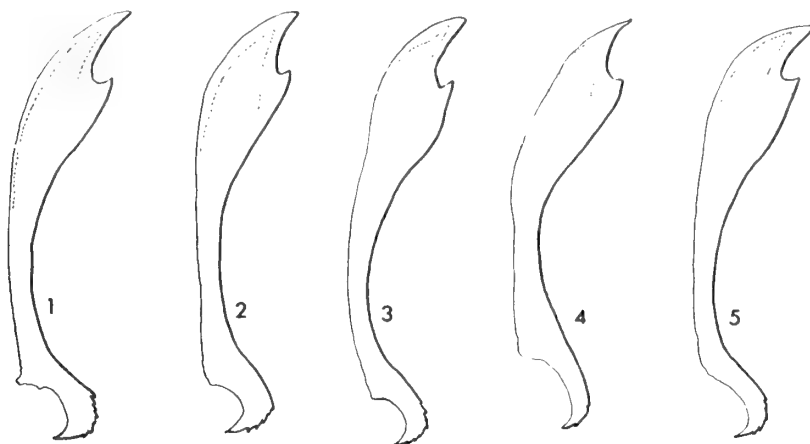


FIG. 200. *Lepidochrysops methymna methymna* (Trimen) valves showing variation, 1-3, Cape Town ; 4-5, Kalk Bay.

- Lepidochrysops cinerea imperialis* (Stoneham), 1938, *Bull. Stoneham Mus.* 36 : 2.
- Lepidochrysops cinerea princeps* (Stoneham), 1938 : 2.
- \**Lepidochrysops coxii* Pinhey, 1945, *Proc. Trans. Rhod. Scient. Ass.* 40 : 61, fig.
- \**Lepidochrysops cupreus* (Neave), 1910. Fig. and fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops delicata* (Bethune Baker), 1923, fig. and fig. genitalia.
- \**Lepidochrysops desmondi* Stempffer, 1951, *Bull. Soc. ent. Fr.* 56 : 70, fig. genitalia.
- \**Lepidochrysops dollmani* (Bethune Baker) 1923, fig. and fig. genitalia.
- \**Lepidochrysops elgonae elgonae* Stempffer, 1950, *Revue fr. Ent.* 17 : 147. Fig. van Someren, 1957, *J. ent. Soc. sth. Afr.* 20.
- \**Lepidochrysops elgonae moyo* van Someren, 1957, *J. ent. Soc. sth. Afr.* 20 : 73, fig.
- Lepidochrysops exclusa* (Trimen), see *peculiaris*.
- Lepidochrysops flavisquamata* Tite, 1959, *Entomologist* 92 : 161, fig.
- Lepidochrysops fulvescens* Tite, 1961, *Entomologist* 94 : 24, fig.
- Lepidochrysops fumosa* (Butler), see *letsea*.
- \**Lepidochrysops gigantea* (Trimen) 1898. Fig. and fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops glauca glauca* (Trimen), 1887. Fig. and fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops glauca swinburnei* Stevenson, 1939, *Proc. Trans. Rhod. Scient. Ass.* 34 : 42.
- \**Lepidochrysops grahami* (Trimen), 1893. Fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops grandis* Talbot, 1937, *Trans. R. ent. Soc. Lond.* 86 : 65, fig.
- \**Lepidochrysops guichardi* Gabriel, 1949, *Proc. R. ent. Soc. Lond. (B.)* 18 : 213, fig.
- \**Lepidochrysops hawkeri* (Talbot), 1929, *Bull. Hill Mus. Witley* 3 : 140, fig.
- Lepidochrysops hypoleucus* (Butler), see *peculiaris*.
- \**Lepidochrysops hypopolia* (Trimen), 1887. Fig. and fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops ignota* (Trimen), 1887. Fig. Trimen, 1906. Fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops intermedia intermedia* (Bethune Baker), 1923, fig. and fig. genitalia.
- \**Lepidochrysops intermedia cottrelli* Stempffer, 1954, *Bull. Soc. ent. Fr.* 59 : 110.
- \**Lepidochrysops inyangae* Pinhey, 1945, *Proc. Trans. Rhod. scient. Ass.* 40 : 64, fig.
- Lepidochrysops irvingi* Swanepoel, 1948, *J. ent. Soc. sth. Afr.* 11 : 193, fig.
- Lepidochrysops jacksoni* van Someren, 1957, *J. ent. Soc. sth. Afr.* 20 : 67, fig.
- \**Lepidochrysops jansei* van Someren, 1957 : 75, fig.
- \**Lepidochrysops jefferyi* (Sweistra), 1909.

- Lepidochrysops kilimandjarensis* (Strand), 1909.  
*Lepidochrysops koena* (Strand), 1911.  
*Lepidochrysops labwor* van Someren, 1957, *J. ent. Soc. sth. Afr.* : 68, fig.  
 \**Lepidochrysops lacrimosa lacrimosa* (Bethune Baker), 1923, fig. and fig. genitalia.  
 \**Lepidochrysops lacrimosa major* (Bethune Baker), 1923.  
 \**Lepidochrysops lerothodi* (Trimen), 1904. Fig. genitalia, Bethune Baker, 1923.  
 \**Lepidochrysops letsea* (Trimen), 1870. Fig. genitalia, Bethune Baker, 1923.  
*fumosa* (Butler), 1885.  
 \**Lepidochrysops leucon* (Mabille), 1879. Fig. Mabille, 1885-87.  
*Lepidochrysops loewensteini* Swanepoel, 1951, *J. ent. Soc. sth. Afr.* : 57, fig.  
 \**Lepidochrysops longifalces* Tite, 1961, *Entomologist* **94** : 22, fig. and fig. genitalia.  
*Lepidochrysops lotana* Swanepoel, 1962, *J. ent. Soc. sth. Afr.* **25** : 291, fig.  
*Lepidochrysops loveni* (Aurivillius), see *parsimon*.  
 \**Lepidochrysops lukenia* van Someren, 1957, *J. ent. Soc. sth. Afr.* : 69, fig.  
 \**Lepidochrysops mashuna* (Trimen). Fig. and fig. genitalia, Bethune Baker, 1923.  
*Lepidochrysops menna* (Hulstaert), see *cinerea*.  
 \**Lepidochrysops methymna methymna* (Trimen), 1862. Fig. and fig. genitalia, Bethune Baker, 1923.  
*Lepidochrysops methymna dicksoni* Tite, 1964, *Entomologist* **97** : 7.  
 \**Lepidochrysops mpanda* Tite, 1961, *Entomologist* **94** : 23, fig.  
*Lepidochrysops nacrescens* Tite, 1961 : 24, fig.  
*Lepidochrysops naidina* (Butler), 1885.  
 \**Lepidochrysops neavei* (Bethune Baker), 1923, fig. and fig. genitalia.  
 \**Lepidochrysops negus* (Felder), 1865. Fig. and fig. genitalia, Bethune Baker, 1923.  
*Lepidochrysops negus f. wau* (Wichgraf), 1921.  
*Lepidochrysops negus* (Karsch), see *quassi*.  
 \**Lepidochrysops neonegus neonegus* (Bethune Baker), 1923, fig. and fig. genitalia.  
*variegata* (Bethune Baker), 1923.  
 \**Lepidochrysops neonegus borealis* van Someren, 1957, *J. ent. Soc. sth. Afr.* **20** : 64, fig.  
 \**Lepidochrysops nevillii* (Bethune Baker), 1923, fig. and fig. genitalia.  
 \**Lepidochrysops nigeriae* Stempffer, 1957, *Bull. Inst. fr. Afr. noire* **19** : 225, fig.  
*Lepidochrysops nigritia* Tite, 1959, *Entomologist* **92** : 162, fig.  
 \**Lepidochrysops niobe* (Trimen), 1862. Fig. Trimén, 1866. Fig. genitalia, Bethune Baker, 1923.  
*Lepidochrysops nyasae* (Bethune Baker), see *aethiopia*.  
 \**Lepidochrysops nyika* Tite, 1961, *Entomologist* **94** : 23, fig.  
 \**Lepidochrysops oreas* Tite, 1964, *Entomologist* **97** : 4, fig. genitalia.  
*ortygia* Trimén 1887 (*in parte*).  
*Lepidochrysops orontius* (Hulstaert), see *skotios*.

- \**Lepidochrysops ortygia* (Trimen), 1887. Fig. Trimén, 1906. Fig. genitalia, (Bethune Baker), 1923, fig. 15.  
*asteris* (Trimen), 1870, *in parte*.
- \**Lepidochrysops pampolis* (H. H. Druce), 1905. Fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops parsimon parsimon* (Fabricius), 1775. Fig. genitalia, Bethune Baker, 1923.  
*celaeus* (Cramer), 1782; *loveni* (Aurivillius), 1922.  
*Lepidochrysops parsimon* f. *albicans* (Hulstaert), 1924, *Revue zool. afr.* **12** : 143.  
*Lepidochrysops parsimon abyssiniensis* (Strand), 1911.
- \**Lepidochrysops parsimon anerius* (Hulstaert), 1924, *Revue zool. afr.* **12** : 139.  
*Lepidochrysops parsimon kivuensis* (Joicey & Talbot), 1921, *Bull. Hill Mus. Witley* **1** : 99, fig.
- \**Lepidochrysops parsimon oculus* (Ungemach), 1932, *Mem. Soc. Sci. nat. Phys. Maroc* **32** : 92.  
*Lepidochrysops parsimon* (Wallengren), see *patricia*.
- \**Lepidochrysops patricia* (Trimen), 1887. Fig. Trimén, 1906. Fig. genitalia, Bethune Baker, 1923.  
*parsimon* (Wallengren), 1875 (nec Fabricius, 1775).
- \**Lepidochrysops peculiaris* (Rogenhofer), 1891. Fig. and fig. genitalia, Bethune Baker, 1923.  
*perpulchra* (Holland), 1892; *hypoleucus* (Butler), 1894; *exclusa* (Trimen), 1894.
- \**Lepidochrysops pephredo* (Trimen), 1899. Fig. Trimén, 1906. Fig. genitalia, Bethune Baker, 1923.  
*Lepidochrysops perpulchra* (Holland), see *peculiaris*.  
*Lepidochrysops phasma* (Butler), see *quassi*.
- \**Lepidochrysops plebeja plebeja* (Butler), 1898. Fig. genitalia, Bethune Baker, 1923 : 31.
- \**Lepidochrysops plebeja proclus* (Hulstaert), 1924, *Revue zool. afr.* **12** : 137.
- \**Lepidochrysops polydialecta* (Bethune Baker), 1923, fig. and fig. genitalia.  
*Lepidochrysops praeterite* Swanepoel, 1962, *J. ent. Soc. sth. Afr.* **25** : 293, fig.
- \**Lepidochrysops procera* (Trimen), 1893. Fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops pterou pterou* (Bethune Baker), 1923.
- \**Lepidochrysops pterou lilacina* (Ungemach), 1932, *Mem. Soc. Sci. nat. Phys. Maroc* **32** : 92.
- \**Lepidochrysops pterou suk* van Someren, 1957, *J. ent. Soc. sth. Afr.* **20** : 61, fig.
- \**Lepidochrysops puncticilia* (Trimen), 1883. Fig. Trimén, 1887. Fig. genitalia, Bethune Baker, 1923.
- \**Lepidochrysops quassi* (Karsch), 1895. Fig. H. H. Druce, 1910. Fig. genitalia, Bethune Baker, 1923.  
*negus* (Karsch), 1893; *phasma* (Butler), 1901.
- \**Lepidochrysops reichenowi* (Dewitz), 1879.  
*Lepidochrysops rhodesendae* (Bethune Baker), 1923. Fig. and fig. genitalia, Bethune Baker, 1923.



- Lepidochrysops ringa* Tite, 1959, *Entomologist* **92** : 163, fig.  
*Lepidochrysops ruthica* Pennington, 1953, *J. ent. Soc. sth. Afr.* **16** : 107, fig.  
 \**Lepidochrysops skotios* (H. H. Druce), 1905. Fig. genitalia, Bethune Baker, 1923.  
*orontius* Hulstaert, 1924 ; *brabo* (Hulstaert), 1924.  
 \**Lepidochrysops solwezi* (Bethune Baker), 1923, fig. and fig. genitalia.  
 \**Lepidochrysops stormsi* (Ribbe), 1892. Fig. Aurivillius, 1898. Fig. genitalia, Bethune Baker, 1923.  
 \**Lepidochrysops subvariegata* Talbot, 1935, *Entomologist's mon. Mag.* **71** : 150, fig.  
*Lepidochrysops swanepoeli* Pennington, 1948, *J. ent. Soc. sth. Afr.* **11** : 164, fig.  
*Lepidochrysops sylvius* (Hulstaert), see *synchrematiza*.  
 \**Lepidochrysops synchrematiza* (Bethune Baker), 1923. Fig. and fig. genitalia *sylvius* (Hulstaert), 1924.  
 \**Lepidochrysops tantalus* (Trimen), 1887. Fig. Trimen, 1906. Fig. genitalia, Bethune Baker, 1923.  
*Lepidochrysops theodota* (Hulstaert), see *cinerea*.  
 \**Lepidochrysops trimeni* (Bethune Baker), 1923, fig. and fig. genitalia. *celaeus* (Trimen) (*in parte*).  
 \**Lepidochrysops vansoni* Swanepoel, 1949, *J. ent. Soc. sth. Afr.* **12** : 123, fig.  
*Lepidochrysops variegata* (Bethune Baker), see *neonegus*.  
*Lepidochrysops vera* Tite, 1961, *Entomologist* **94** : 25, fig.  
 \**Lepidochrysops victoriae victoriae* (Karsch), 1895. Fig. H. H. Druce, 1910. Fig. genitalia, Bethune Baker, 1923. *acholi* (Bethune Baker), 1906.  
 \**Lepidochrysops victoriae vansomereni* Stempffer, 1951, *Bull. Soc. ent. Fr.* **56** : 69.  
 \**Lepidochrysops violetta* Pinhey, 1945, *Proc. Trans. Rhod. scient. Assoc.* **40** : 66, fig.  
*Lepidochrysops wykehami* Tite, 1964, *Entomologist* **97** : 5, fig. and fig. genitalia.

Genus **EUCHRYSOPS** Butler

*Euchrysops* Butler, 1900, *Entomologist* **33** : 1 ; Pinhey, 1949 : 118 ; Swanepoel, 1953 : 113, 114. Type-species : *Hesperia cnejus* Fabricius (Indo-Malayan species) by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 373 ; 1925 : 473, 483, 484.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 165, 167, 169, 170.

*Eyes* glabrous ; palpi long, ascending, second segment laterally compressed clothed below with long white scales, third segment short, acuminate ; antennae slender, about half the length of the costa, club elongate, gradually swollen, clavate ; thorax clothed below with white silky hair ; ♂ fore leg, femur clothed with white hair, tibia shorter than femur, tarsus unsegmented.

*Wing shape.* Fore wing subtriangular ; hind wing oval, a very short linear tail at the end of vein 2, anal angle rounded.

*Wing venation* (Text-fig. 333). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 201). Uncus composed of two small lobes ("cheeks" of Bethune Baker) fused to the margin of the tegumen; subunci long, bent about one-third from origin, tapering gradually to the apex which bears a wide-open claw, tegumen fairly large, the posterior edge with a rounded depression so deep that it leaves only a narrow median strip; vinculum narrow in the sternite; lower fultura Y-shaped and bearing an anellus which sheathes the penis; valves elongate oval at the base, narrow in the middle, the upper part deeply notched just before the crescentic apex, whose lower edge is slightly serrate; penis elongate, the internal portion subcylindrical, the external portion dilated at the apex; vesica with numerous fine cornuti, uncus bearing long, fine hair, valves with stiffer hair especially on the lower edge in the basal half.

The male genitalia of all the *Euchrysops* are like those of *E. cnejus*, and most of them have been figured by Bethune Baker (1923). They differ little from those of *Lepidochrysops*, and I find difficulty in defining the limits of these two genera. On the other hand they are far removed from *strabo* Fabricius, type-species of the genus *Catochrysops* Boisduval, in which Fruhstorfer (1924 in Seitz, *Macrolep.* 9: 921) surprisingly included species belonging to two other quite different genera, namely *cnejus* (*Euchrysops*) and *pandava* (*Chilades*).

In the following list it will be noticed that two species are included, on account of the structure of their male genitalia, which are commonly included in genera only remotely related to *Euchrysops*. These are *unigemmata* Butler, described as a *Zizera* but transferred later by Butler to *Chilades*, and *crawshayi* Butler described as a *Scolitantides*, but placed by Aurivillius in *Harpencyreus*.

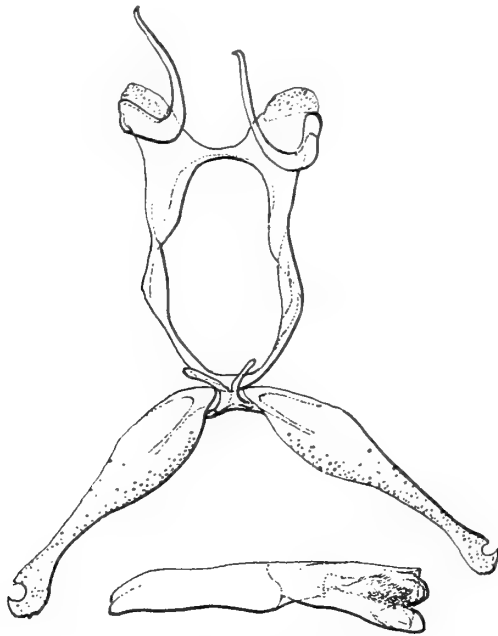


FIG. 201. *Euchrysops cnejus* (Fabricius), ♂ genitalia.

The early stages of some species of *Euchrysops* have been described, viz. *E. crawshayi* by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 234), *E. malathana* by Farquharson (1921, *Trans. ent. Soc. Lond.* **1921** : 377), by Jackson (1937 : 235) and by Pinhey (1949 : 118), *E. osiris* by Jackson (1937 : 236) and Pinhey (1949 : 119).

LIST OF SPECIES OF *Euchrysops*

- \**Euchrysops abyssinica* (Aurivillius), 1922.
- \**Euchrysops albistriatus* (Capronnier), 1889. Fig. genitalia, Bethune Baker, 1923.
- Euchrysops anubis* (Snellen), see *osiris*.
- Euchrysops asopus* (Hopffer), see *malathana*.
- Euchrysops asteris* (Snellen), see *barkeri*.
- \**Euchrysops barkeri* (Trimen), 1893. Fig. genitalia, Bethune Baker, 1923.
- asteris* (Snellen), 1872 ; *tiressa* (Karsch), 1985 ; *osiris* ♀ (Trimen), 1887.
- Euchrysops browni* Stempffer, see *unigemmata*.
- \**Euchrysops brunneus* Bethune Baker, 1923, fig. genitalia.
- Euchrysops congruensis* (Mabille), see *malathana*.
- \**Euchrysops crawshayi* (Butler), 1899. Fig. genitalia, Stempffer, 1938, *Mission Omo* **4** : 204.
- subdita* (Smith), 1902 ; *crawshayinus* (Aurivillius), 1925.
- Euchrysops crawshayinus* (Aurivillius), see *crawshayi*.
- Euchrysops cuprescens* (E. Sharpe), see *osiris*.
- \**Euchrysops cyclopterus* (Butler), 1876. Fig. and fig. genitalia, Bethune Baker, 1923.
- \**Euchrysops decaryi* Stempffer, 1947, *Revue fr. Ent.* **14** : 139, fig. genitalia.
- \**Euchrysops dolorosa* (Trimen), 1887. Fig. Trimén, 1906. Fig. genitalia, Bethune Baker, 1923.
- Euchrysops fescennia* Hulstaert, see *subpallida*.
- Euchrysops horus* (Stoneham), 1938, *Bull. Stoneham Mus.* **36** : 3.
- \**Euchrysops jacksoni* Stempffer, 1952, *Bull. Soc. ent. Fr.* **57** : 117. Fig. and fig. genitalia.
- \**Euchrysops kabrosae* (Bethune Baker), 1906. Fig. and fig. genitalia, Bethune Baker, 1923.
- Euchrysops kama* (Trimen), see *malathana*.
- Euchrysops katangae* Bethune Baker, 1923, fig. and fig. genitalia.
- Euchrysops latruncula* (Grünberg), 1910.
- Euchrysops lois* (Butler), 1896.
- \**Euchrysops malathana malathana* (Boisduval), 1833. Fig. genitalia, Bethune Baker, 1923.
- asopus* (Hopffer), 1855 ; *kama* (Trimen), 1862 ; *congruensis* (Mabille), 1877.
- Euchrysops malathana nilotica* (Aurivillius), 1904.
- \**Euchrysops mauensis mauensis* Bethune Baker, 1923, fig. and fig. genitalia.
- Euchrysops mauensis abyssiniae* Storace, 1950, *Doriana* **1** (7) : 1.

- \* ***Euchrysops migiurtinensis*** Stempffer, 1946, *Revue fr. Ent.* **13** : 17, fig. and fig. genitalia.
- \* ***Euchrysops nandensis nandensis*** (Neave), 1904. Fig. genitalia, Bethune Baker, 1923.
- Euchrysops nandensis abyssiniae*** (Storace), 1953, *Doriana* **1** (35) : 3.
- \* ***Euchrysops osiris osiris*** (Hopffer), 1855. Fig. Hopffer, 1862. Fig. genitalia, Bethune Baker, 1923.  
*anubis* (Snellen), 1872 ; *phoa* (Snellen), 1872 ; *pyrrhops* (Mabille), 1877 ; *cuprescens* (E. Sharpe), 1898.
- Euchrysops osiris australis*** Hulstaert, 1924, *Revue zool. afr.* **12** : 136.
- Euchrysops osiris orientalis*** Hulstaert, 1924, *Revue zool. afr.* **12** : 136.
- Euchrysops osiris*** ♀ (Trimen), nec Hopffer, see *barkeri*.
- Euchrysops philbyi*** Gabriel, 1954, *S.W. Arabia Exp.* 1937-38 : 386, fig.
- Euchrysops phoa*** (Snellen), see *osiris*.
- Euchrysops pyrrhops*** (Mabille), see *osiris*.
- \* ***Euchrysops reducta reducta*** Hulstaert, 1924, *Revue zool. afr.* **12** : 134. Fig. genitalia, Stempffer, 1961, *Annls Mus. R. Afr. centr.* **94** : 67.
- Euchrysops reducta niveocincta*** Ungemach, 1932, *Mem. Soc. Sci. nat. Phys. Maroc* **32** : 93.
- \* ***Euchrysops severini*** Hulstaert, 1924, *Revue zool. afr.* **12** : 134.
- Euchrysops subdita*** (Smith), see *crawshayi*.
- \* ***Euchrysops subpallida subpallida*** Bethune Baker, 1923, fig. and fig. genitalia.  
*fescennia* Hulstaert, 1924.
- Euchrysops subpallida major*** Bethune Baker, 1923.
- Euchrysops tiressa*** (Karsch), see *barkeri*.
- \* ***Euchrysops unigemmata*** (Butler), 1895.  
*browni* Stempffer, 1954.

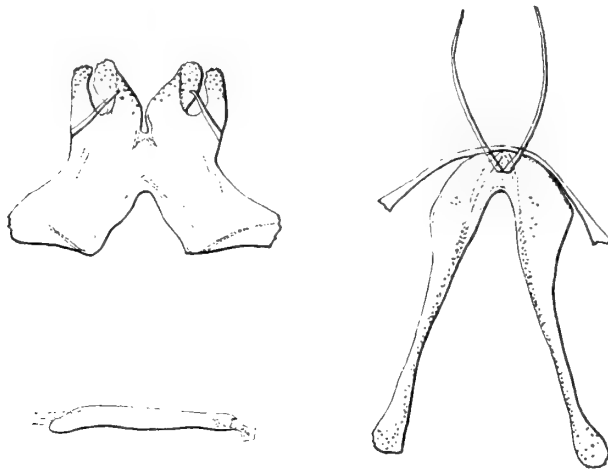


FIG. 202. *Eicochrysops eicotrochilus* Bethune Baker, ♂ genitalia.

Genus *EICOCHRYSOPS* Bethune Baker

*Eicochrysops* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 132 ; Pinhey, 1949 : 119 ; Swanepoel, 1953 : 70. Type-species : *Eicochrysops eicotrochilus* Bethune Baker, by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 376 ; 1925 : 487.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 151, 152, 178.

*Eyes* smooth ; palpi long, ascending, second segment long, laterally compressed, clothed below with adpressed scales and long erect bristles, third segment slender, acuminate ; antennae slender, longer than half the length of the costa, club fusiform ; thorax clothed below with long white silky hair ; ♂ fore tarsus unsegmented.

*Wing shape.* Fore wing subtriangular, outer margin slightly convex ; hind wing oval, tailless in the type-species.

*Wing venation* (Text-fig. 334). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 202). Uncus has four lobes, the median pair rolled up in the shape of a cornet with irregularly toothed edges, the lateral pair nodose at their apices ; subunci straight, slender, almost filiform ; tegumen very large, hood-shaped, so that, when viewed in profile in the natural position, the lateral lobes of uncus appear as if situated below the median lobes ; vinculum very narrow ; lower fultura formed of two long slender arms ; anellus absent ; valves long, narrowly digitate, with spatulate apices ; penis very small, elongate, cylindrical ; vesica with fine cornuti ; uncus and lower edges of valves bearing long hair.

The male genitalia of all the species examined closely resemble those of *eicotrochilus* and it is easier to distinguish the species by external characters than by their genitalia. In *pusillus*, *distractus*, *hippocrates* and *sanguigutta* the hind wing has a filiform tail at the end of vein 2, which character would suffice to exclude them from *Eicochrysops* if their male genitalia did not resemble so closely those of *eicotrochilus*. I illustrate (Text-fig. 203) under higher magnification half the uncus and tegumen of *hippocrates* to show more clearly the peculiar shape of these parts. *E. hippocrates*, incidentally has been referred, in faunistic works, to various different genera, including *Cupido*, *Everes* and *Cupidopsis*.



FIG. 203. *Eicochrysops hippocrates* (Fabricius), ♂ genitalia.

In spite of the differences in the external appearance of its species the genus *Eicochrysops* seems very homogeneous.

The early stages of *nandianus* and *messapus* have been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 236), by Dickson (1945, *J. ent. Soc. sth. Afr.* **7** : 150) and by Pinhey (1948 : 119).

Aurivillius (1898 : 376 and 1925 : 487) places *scintilla* Mabilles close to *E. sanguigutta*, but the only characters common to these two species are their habitat (Madagascar) and their commonplace venation.

Male genitalia of *scintilla* (Text-fig. 204). Uncus composed of two small rounded lobes fused to the tegumen on either side of the median concavity of the posterior edge ; no subunci ; tegumen and vinculum large ; lower fultura with long slender divergent arms ; valves oblong, oval, apex rounded and bearing a strong spine bent back towards the body of the valve, penis very robust, base dilated and heart-shaped ; vesica with numerous cornuti and some strong spines ; uncus and distal portions of valves pilose.

The male genitalia of *scintilla* are unlike any that I know among Ethiopian species ; the penis with its heart-shaped base reminds one of the penis of palaeartic species of *Maculinea*, but that is the only point of resemblance. This species seems to me to be unique and its place in the classification is uncertain. In any case it cannot be included in *Eicochrysops*, nor in *Nacaduba* where it has been placed by Lathy (*Encycl. ent. B.* II Lep. **2** : 40, 1926).

#### LIST OF SPECIES OF *Eicochrysops*

*Eicochrysops antoto* (Strand), 1911. Fig. Aurivillius in Seitz, 1925.

*Eicochrysops coeruleoarcuatus* (Saalmuller) ; see *sanguigutta*.

*Eicochrysops delicatula* (Mabilles), see *hippocrates*.

\**Eicochrysops distractus* (de Joannis), 1913.

\**Eicochrysops dudgeoni* Riley, 1929, *Trans. ent. Soc. Lond.* **77** : 497, fig.

\**Eicochrysops eicrochilus* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 132.

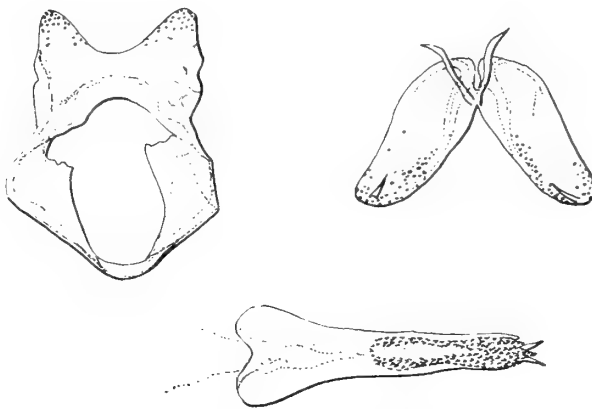


FIG. 204. Genus ? *scintilla* Mabilles, ♂ genitalia.

- \**Eicochrysops fontainei* Stempffer, 1961, *Annls Mus. R. Afr. cent.* **94** : 68, fig. and fig. genitalia.
- \**Eicochrysops hippocrates* (Fabricius), 1793. Fig. Mabilles, 1885-87.  
*delicatula* (Mabilles), 1877.
- \**Eicochrysops mahallakoena mahallakoena* (Wallengren), 1857. Fig. Trimen, 1870.
- \**Eicochrysops mahallakoena trisignatus* (Strand), 1911.
- \**Eicochrysops masai* (Bethune Baker), 1905.
- \**Eicochrysops messapus* (Godart), 1823. Fig. Aurivillius in Seitz, 1925.  
*Eicochrysops messapus* f. *sebagadis* (Guerin), 1847.
- \**Eicochrysops nandianus* (Bethune Baker), 1906.
- \**Eicochrysops pauliani* Stempffer, 1950, *Naturaliste malgache* **2** : 131, fig.
- \**Eicochrysops pusillus* (Ungemach), 1932, *Mem. Soc. Sci. phys. Nat. Maroc* **32** : 94, 96, fig.
- \**Eicochrysops rogersi* Bethune Baker, 1924, *Ann. Mag. nat. Hist.* (9) **14** : 133.
- \**Eicochrysops sanguigutta* (Mabilles), 1879. Fig. Mabilles, 1885-7.  
*coeruleoarcuatus* (Saalmuller), 1884.
- Eicochrysops sapphirinus* (Stoneham), 1938, *Bull. Stoneham Mus.*, No. **36** : 3.

Genus incertus

- Lycaena scintilla* Mabilles, 1877, *Bull. Soc. ent. Fr.* **5** (7) : lxxii.  
*quadriocularis* Saalmuller, 1884.

Genus *CUPIDOPSIS* Karsch

- Cupidopsis* Karsch, 1895, *Ent. Nach.* **21** : 297 ; Pinhey, 1949 : 120 ; Swanepoel, 1953 : 114.  
Type-species : *Lycaena iobates* Hopffer, by original designation.  
*Cupido* Schrank (partim) ; Aurivillius, 1898 : 377 ; 1925 : 489.  
*Lycaena* Fabricius (partim) ; Murray, 1935 : 178.

*Eyes* smooth ; palpi long, ascending, second segment long, laterally compressed, densely clothed with white adpressed scales, third segment shorter, slender, acuminate ; antennae slender, white-annulated, about half the length of the costa, club clavate, well differentiated, thorax clothed below with long white silky hair ; ♂ fore leg, femur clothed with white hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, outer margin convex, hind wing oval, with a filiform tail at the end of vein 2.

*Wing venation* (Text-fig. 335). Fore wing with only 10 veins.

*Male genitalia* (Text-fig. 205). Uncus composed of two small flattened lobes fused to the tegumen on either side of the median concavity, subunci robust, bent at about two-fifths from base, tapering suddenly a little before the apex, which is not hooked ; tegumen large, hood-shaped, vinculum fairly broad with a rounded saccus ; arms of lower futura slender, strongly recurved ; valves oblong, broadly fused to one another at the base and with rounded apices, their internal lamina bearing a kind of hook-like expansion, with a serrated apical edge ; penis long, robust, slightly curved with a short external portion ; vesica with two long rows of cornuti ; uncus, hook-like expansion and apices of valves, pilose.

The male genitalia of *cissus* and *mauritanica* are almost identical with those of *iobates*. As *cissus* has no tail on its hind wing, Karsch (1895 : 297) included it in the genus *Neolycaena* de Niceville (type-species *sinensis* Alpheraky). In my opinion this arrangement cannot be correct as, judging from the male genitalia, the genus *Neolycaena* belongs to the subfamily *Theclinae*, whereas *cissus* belongs to the *Lampidinae*; moreover the presence or absence of a tail in the hind wing has no generic value.

The early stages of *cissus* have been described by Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 237). The caterpillar lives in the pods of *Eriosema cordifolium* Hochst (Leguminosae); it does not seem to be myrmecophilous.

#### LIST OF SPECIES OF *Cupidopsis*

- \**Cupidopsis cissus cissus* (Godart), 1823. Fig. Mabilie, 1885–87. Fig. genitalia, Stempffer, 1938, *Mission Omo* **4**.  
*Cupidopsis cissus* f. *aberrans* (Butler), 1878.  
*Cupidopsis cissus* f. *albiradiatus* (Stoneham), 1938, *Bull. Stoneham Mus.*, No. **36** : 3.  
*Cupidopsis cissus* f. *immaculatus* (Stoneham), 1938, l.c. No. **36** : 3.  
*Cupidopsis cissus catharina* (Trimen), 1862.  
 \**Cupidopsis iobates iobates* (Hopffer), 1855. Fig. Hopffer, 1862.  
*siwani* (Trimen), 1862.  
*Cupidopsis iobates* f. *conjugens* (Strand), 1911.  
*Cupidopsis iobates ochreopuncta* (Aurivillius), 1925.  
*Cupidopsis iobates uranochroa* Ungemach, 1932, *Mem. Soc. Sci. nat. phys. Maroc* **32** : 97, fig.  
*Cupidopsis mauretanica* Riley, 1932, *Ann. Mag. nat. Hist. (10)* **10** : 141, fig.  
*Cupidopsis siwani* (Trimen), see *iobates*.

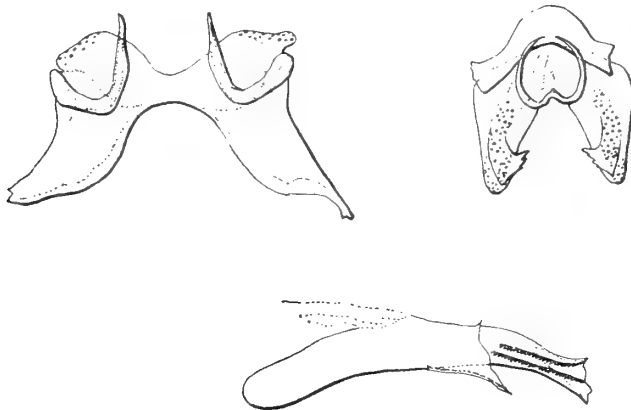


FIG. 205. *Cupidopsis iobates iobates* (Hopffer), ♂ genitalia.



Genus *THERMONIPHAS* Karsch

*Thermoniphas* Karsch, 1895, *Ent. Nachr.* **21** : 303. Type-species : *Thermoniphas plurilimbatus* Karsch, by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 377 ; 1925 : 493.

*Eyes* smooth ; palpi long, second segment laterally compressed, clothed below with long erect white scales, third segment shorter, slender, acuminate, clothed with small black adpressed scales, antennae slender, white annulated, longer than half the length of the costa, club flattened ; thorax clothed below with silky white hair ; ♂ fore leg, tibia shorter than the femur, tarsus unsegmented, clothed below with stiff hair.

*Wing shape.* Fore wing subtriangular, outer margin convex ; hind wing oval, a short filiform tail at the end of vein 2.

*Wing venation* (Text-fig. 336). Fore wing with 11 veins ; 11 runs close to 12 and sometimes touches it at one point.

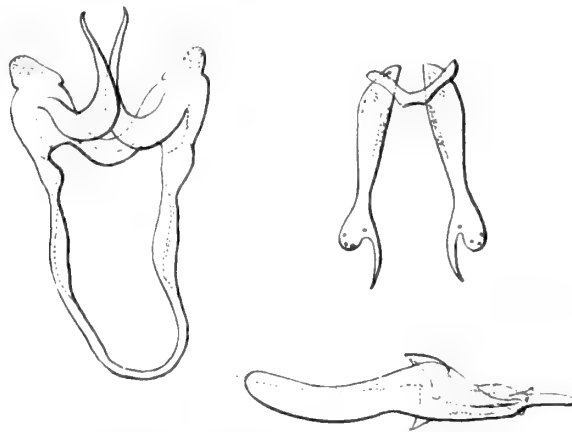


FIG. 206. *Thermoniphas plurilimbata plurilimbata* Karsch, ♂ genitalia.

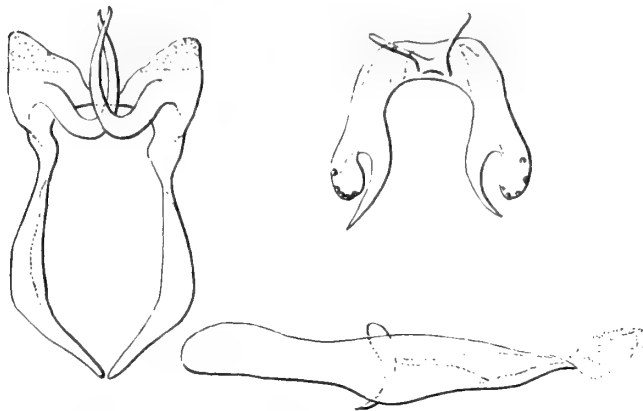


FIG. 207. *Thermoniphas micylus micylus* (Cramer), ♂ genitalia.

*Male genitalia* (Text-fig. 206). Uncus composed of two small suboval lobes like those in *Lepidochrysops* and *Euchrysops* fused on either side of the tegumen; subunci long, robust, curved, tapering evenly to the apex which ends in a shallow hook; tegumen fairly large, reduced on the median line to a narrow strip; vinculum narrow, lower fultura formed of two small divergent arms to which is fused an anellus that sheathes the penis; valves very narrow, upper process with rounded apex, lower process ending in a slightly recurved point; penis elongate, swollen in the middle, slightly curved; vesica with fine cornuti; uncus clothed with long fine hair, a few short hairs on the lower edges of the valves, their apices bearing four bristles, of which the one on the upper process is much longer and stronger than the others.

The species comprising the genus *Thermoniphas* have been described in a variety of genera, e.g. *Cupido*, *Oboronia* and *Everes*. Bethune Baker (1923 : 277) even relegated *micylus* (Text-fig. 207) and *togara* (Text-fig. 208) to the genus *Lycaenopsis*,

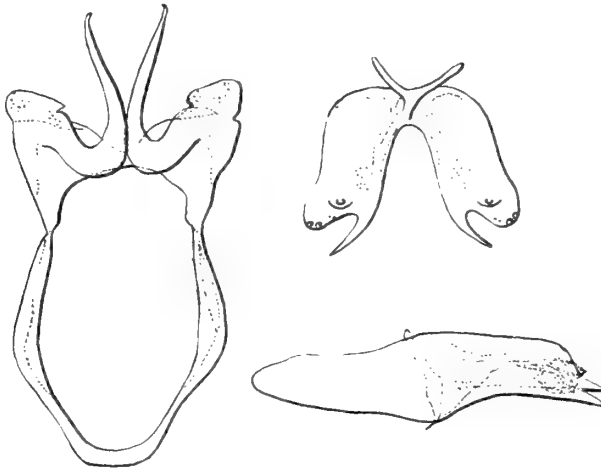


FIG. 208. *Thermoniphas togara togara* (Plötz), ♂ genitalia.

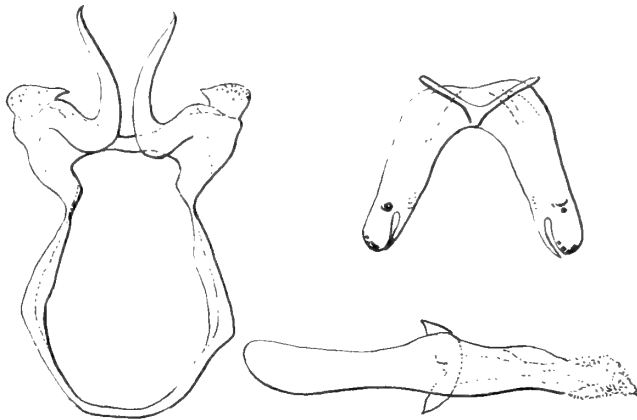


FIG. 209. *Thermoniphas distincta* (Talbot), ♂ genitalia.

which is hard to understand, since he had examined their genitalia. In 1943 (*Ann. Soc. ent. Fr.* **1942** : 131) I suggested that *micylus* (Text-fig. 207) should be transferred to *Thermoniphas*. In 1956 (*Annls Mus. R. Congo belge* **38** : 52) I revised the genus as known at that date and figured the male genitalia of nearly all the species. On the basis of the evidence thus presented, the homogeneity of the genus is clear, and also its affinity to *Lepidochrysoys* and *Euchrysoys* on the one hand and to *Oboronia* on the other. A remarkable generic character peculiar to the genus *Thermoniphas* is the presence of the long stout bristles that arise from the apex of the valves.

LIST OF SPECIES OF *Thermoniphas*

- \**Thermoniphas alberici* (Dufrane), 1945, *Bull. Soc. ent. Belg.* **81** : 123. Fig. genitalia, Stempffer, 1956.
- \**Thermoniphas albocaerula* Stempffer, 1956 : 50, fig. and fig. genitalia.
- Thermoniphas bibundana* (Grünberg), 1910.
- \**Thermoniphas caerulea* Stempffer, 1956 : 49, fig. and fig. genitalia.
- \**Thermoniphas distincta* (Talbot), 1935, *Entomologist's mon. Mag.* **71** : 149. Fig. genitalia, Stempffer, 1956 : 43.
- \**Thermoniphas fontainei* Stempffer, 1956 : 47, fig. and fig. genitalia.
- \**Thermoniphas fumosa* Stempffer, 1952, *Bull. Soc. ent. Fr.* **57** : 119, fig. and fig. genitalia.
- Thermoniphas kamitugensis* (Dufrane), 1945, *Bull. Annls Soc. ent. Belg.* **81** : 122.
- \**Thermoniphas kigezi* Stempffer, 1956 : 48, and fig. genitalia.
- \**Thermoniphas leucocyana* Clench, 1961, *Ann. Carnegie Mus.* **36** : 56, fig. and fig. genitalia.
- \**Thermoniphas micylus micylus* (Cramer), 1780. Fig. genitalia, Stempffer, 1956 : 41.
- \**Thermoniphas micylus colarata* (Ungemach), 1932, *Mem. Soc. Sci. nat. Phys. Maroc* **32** : 97. Fig. and fig. genitalia, Stempffer, 1956, 42.
- \**Thermoniphas plurilimbata plurilimbata* Karsch, 1895.
- \**Thermoniphas plurilimbata rutshurensis* (Joicey & Talbot), 1921, *Bull. Hill Mus. Witley* **1** : 99. Fig. genitalia, Stempffer, 1956, 40.
- \**Thermoniphas stempfferi* Clench, 1961, l.c. : 52, fig. and fig. genitalia.
- \**Thermoniphas togara togara* (Plötz), 1880. Fig. and fig. genitalia, Stempffer, 1956 : 45.
- \**Thermoniphas togara bugalla* Stempffer & Jackson, 1962, *Proc. R. ent. Soc. Lond. (B.)* **31** : 35.

Genus **OBORONIA** Karsch

*Oboronia* Karsch, 1893, *Berl. ent. Z.* **38** : 229. Type-species : *Plebeius punctatus* Dewitz, 1879 (*Lycaena elorea* Staudinger, Karsch, 1893, nec *Papilio elorea* Fabricius 1793 ; *Obornia staudingeri* Hemming 1960), selected by Hemming, 1960.  
*Cupido* Schrank (partim) ; Aurivillius, 1898 : 380 ; 1925 : 493.

In his description of the genus, Karsch does not designate a type-species, but gives as included species *elorea* Staudinger (with a reference to Staudinger's figure in *Exot. Schmett.*, pl. 94) and *ornata* Mabille. In the *Ent. Nachr.*, **21** : 297, 1895, the same author erects for *ornata* the genus *Athysanota* and under *Oboronia* he writes " zu *Oboronia* gehören *punctata* Dewitz = *elorea* Staudinger nec Fabricius, *gussfeldti* Dewitz, etc." Hemming (1960, *Annot. Lep.* **1** : 35) pointed out that there was no such nominal species as *Lycaena elorea* Staudinger, gave the name *Oboronia staudingeri* to the species depicted by Staudinger and then selected *Oboronia staudingeri* as type-species of the genus *Oboronia*. The oldest name for this species is, however, *Plebeius punctatus* Dewitz, 1879.

*Eyes* smooth ; palpi long, ascending, second segment long, laterally compressed clothed below with long white scales and stiff hair, third segment short, acuminate ; antennae slender, about half the length of the costa, club very elongate and flattened ; thorax clothed below with white hair ; ♂ fore leg, femur slightly flattened, tibia much shorter than femur, tarsus unsegmented.

*Wing shape.* Fore wing subtriangular, costa and outer margin strongly convex, hind wing oval, a short linear tail at the end of vein 2.

*Wing venation* (Text-fig. 337). Fore wing with 11 veins ; 10 and 11 free from the upper edge of the cell. Aurivillius (1898 : 380) points out that the differences in the venation between *Thermoniphas* and *Oboronia* are slight and inconstant ; this is true, for in certain specimens of *punctatus* vein 11 bends towards 12 and is sometimes confluent with it.

*Male genitalia* (Text-fig. 210). Uncus composed of two small subtriangular lobes with rounded apices fused to the lateral angles of the tegumen ; subunci long, bent about two-fifths from base, tapering evenly from base to apex which ends as a shallow hook ; tegumen with a rounded median hollow on posterior margin ; vinculum fairly wide ; lower fulcrum with two short divergent arms to which is fused an anellus that sheathes the penis ; valves very elongate, widened at their base, then digitate, the lower process slightly serrated at its apex, penis elongate, internal portion cylindrical, external portion slightly dilated and divided into two processes ; vesica with numerous cornuti ; uncus and apices of valves pilose.

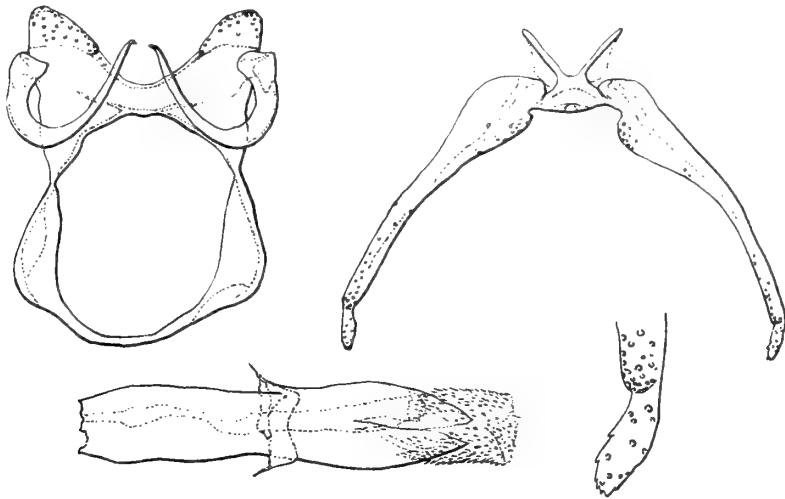


FIG. 210. *Oboronia punctatus punctatus* (Dewitz), ♂ genitalia.

The male genitalia of all the species examined, except *liberiana*, closely resemble those of *punctatus*, the slight differentiating specific characters being found in variations in the shape of the apex of the valves. In *O. liberiana*, (fig., Stempffer, 1950, *Bull. Inst. fr. Afr. noire* **12** : 406) the dorsal structures are very characteristic ; tegumen very wide with only a small rounded median notch, the uncus a narrow strip bordering the posterior edge of the tegumen and interrupted at the notch, subunci long, bent, very robust. But the vinculum, lower fultura, valves and penis are of the type common to the other species of *Oboronia*.

The larva of *O. punctatus* has been described by Poulton (1911, *Proc. ent. Soc. Lond.* **1911** : ci) and by Lamborn (1913, *Trans. ent. Soc. Lond.* **46** : 489). It lives in the flowers of *Costus afer* and ants of the genus *Pheidole* construct shelters over them from plant debris.

LIST OF SPECIES OF *Oboronia*

- \**Oboronia albicosta* (Gaede), 1915.
- \**Oboronia bueronica* Karsch, 1895. Fig. Aurivillius in Seitz, 1925.
- Oboronia elorea* (Staudinger), see *punctatus*.
- \**Oboronia gussfeldti* (Dewitz), 1879.
- \**Oboronia liberiana* Stempffer, 1950, *Bull. Inst. fr. Afr. noire* **12** : 405, fig. and fig. genitalia.
- \**Oboronia pseudopunctatus* Strand, 1912.
- \**Oboronia punctatus punctatus* (Dewitz), 1879.
- elorea* (Staudinger) nec Fabricius ; *staudingeri* Hemming, 1960.
- \**Oboronia punctatus arctimargo* Hulstaert, 1924, *Revue zool. afr.* **12** : 143.
- \**Oboronia punctatus jacksoni* Stempffer, 1943, *Ann. Soc. ent. Fr.* **1942** : 132.
- Oboronia staudingeri* Hemming, see *punctatus*.

Genus *ATHYSANOTA* Karsch

*Athysanota* Karsch, 1895, *Ent. Nachr.* **21** : 297. Type-species : *Lycaena ornata* Mabille, by monotypy.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 381 ; 1925 : 494.

*Eyes* smooth ; palpi long, ascending, second segment long, laterally compressed, clothed below with long erect scales, which are white at the base and black at the apex, third segment slender, cylindrical, acuminate ; antennae slender, about half the length of the costa, club very elongate, not well differentiated, apex pointed ; thorax clothed below with white hair ; ♂ fore leg, tibia much shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, costa and outer margin strongly convex, hind wing oval, no tail.

*Wing venation* (Text-fig. 338). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 211). Uncus composed of two small subquadrangular lobes fused to the lateral angles of the tegumen ; subunci very long, slender, bent about one-third from origin, apex ending as a shallow hook ; tegumen with a rounded depression in its posterior margin, vinculum rather broad ; lower fultura comprising two small divergent arms fused to an anellus that sheathes the penis ; valves digitate, a little dilated in the middle, lower process

with a recurved apex which bears a few spines, its edge deeply serrate ; penis cylindrical in its internal portion, the external portion dilated and divided into two processes ; vesica with fine cornuti ; uncus and valves pilose.

Both in external appearance, and the structure of the male genitalia, *A. ornata* is closely related to the species of *Oboronia*.

#### LIST OF SPECIES OF *Athysanota*

- \**Athysanota ornata ornata* (Mabille), 1890.  
*pseudosoxyauxi* (Ehrmann), 1894.  
*Athysanota ornata flava* Holland, 1920.  
*Athysanota ornata vestalis* Aurivillius, 1895.  
*Athysanota pseudosoxyauxi* (Ehrmann), see *ornata*.

#### Genus *CHILADES* Moore

*Chilades* Moore, 1881, *Lep. Ceylon* 1 : 76. Type-species : *Papilio laius* Cramer (an Indo-Malayan species), by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 375, 381 ; 1925 : 485, 490, 491.

Eyes with very short, scarcely visible hair ; palpi long, ascending, second segment long, strongly compressed laterally, clothed below with long erect bristles, third segment short, slender, antennae slender, about half the length of the costa club distinct, but not very stout, with pointed tip ; thorax clothed below with long white silky hair ; ♂ fore leg, femur clothed

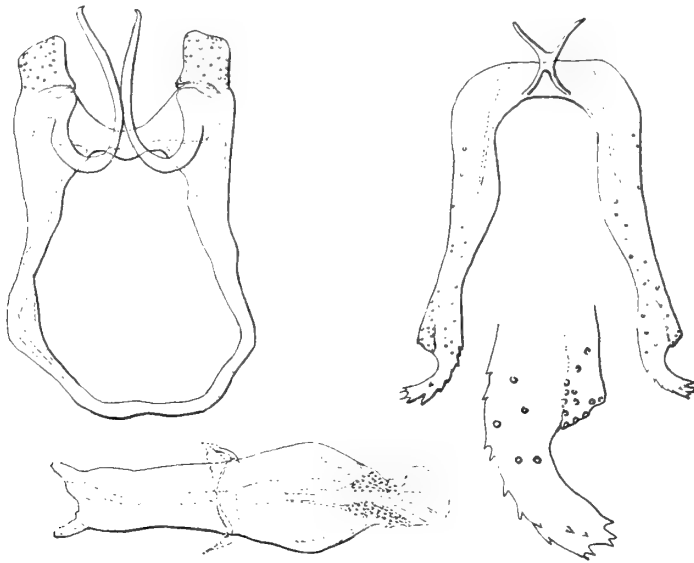


FIG. 211. *Athysanota ornata ornata* (Mabille), ♂ genitalia.

with white hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, costa slightly convex, apex rounded, outer margin convex ; hind wing oval, no tail.

*Wing venation* (Text fig. 339).

*Male genitalia* (Text-fig. 212) (see also Bethune Baker, 1913, *Trans. ent. Soc. Lond.* **1913** pl. 4 and Stempffer, 1937, *Bull. Soc. ent. Fr.* **42** : 214). Uncus composed of two long digitate processes with rounded apices ; subunci long, bent in an acute angle close to their massive bases, apices hooked, tegumen reduced as in all species of the subfamily Plebeiinae ; arms of the 9th sternite united dorsally to form a pseudotergum (for an account of this structure, peculiar to the Plebeiinae, see Bayard (1933, *Bull. Soc. fr. Microsc.* **3** : 4), and Stempffer, (1937, *Bull. Soc. ent. Fr.* **42** : 213, fig. A) ; lower fultura in the form of a furca with very long slender arms ; valves fusiform, the upper process connected in its middle to the pseudotergum by a weakly sclerotized membrane, traces of which can be seen in the dorsal region, ending in a finely toothed comb, lower process with a rounded apex ; penis elongate, slightly curved, apex pointed ; uncus and lower process of valves densely pilose.

I place in the genus *Chilades* the following African species, of which I have been able to examine the male genitalia, *eleusis*, *nigeriae*, *elicola*, *kedonga* and *parrhasius*, their genitalia being of the same pattern as in *laius* ; those of *eleusis*, *nigeriae* and *elicola* are indeed so similar that they may be races of a single species. In *kedonga* (see Text-fig. 213) the valves are shorter and broader, but the other parts are very like those of *laius*.

I have not been able to examine the genitalia of *sanctithomae* and *alberta*, and only refer them to the genus *Chilades* with reserve.



FIG. 212. *Chilades laius* (Cramer), ♂ genitalia.

LIST OF SPECIES OF *Chilades*

*Chilades alberta* Butler, 1901.

*Chilades contracta* (Butler), see *parrhasius*.

\**Chilades eleusis eleusis* (Demaison), 1888. Fig. Aurivillius in Seitz, 1925.

Fig. Genitalia, Stempffer, 1936, *Livre jubilaire Bouvier* : 324.

*podorina* (Mabille), 1890 ; *pharaonis* (Staudinger), 1894.

*Chilades eleusis strigatus* (Aurivillius), 1925.

\**Chilades elicola* (Strand), 1911. Fig. Aurivillius in Seitz, 1925.

\**Chilades kedonga* (Gr. Smith), 1898. Fig. Butler, 1899.

*pulchristriata* (Bethune Baker), 1905.

\**Chilades nigeriae* (E. Sharpe), 1902.

\**Chilades parrhasius* (Fabricius), 1793.

*contracta* Butler, 1880.

*Chilades pharaonis* (Staudinger), see *eleusis*.

*Chilades podorina* (Mabille), see *eleusis*.

*Chilades pulchristriata* (Bethune Baker), see *kedonga*.

*Chilades sanctithomae* (E. Sharpe), 1893.

Genus **FREYERIA** Courvoisier

*Freyeria* Courvoisier, 1920, *Dt. ent. Z. Iris* **34** : 234 ; Pinhey, 1949 : 120 ; Swanepoel, 1953 : 80

Type-species : *Lycaena trochylus* Freyer, by monotypy.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 376 ; 1925 : 489, 495.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 150.

Eyes smooth ; palpi long, ascending, second segment long, laterally compressed, clothed below with long stiff hair, third segment long, slender, cylindrical, acuminate ; antennae slender, three-fifths the length of the costa, club fusiform, well differentiated ; ♂ fore leg, tibia as long as the femur, tarsus unsegmented, finely spinose below.

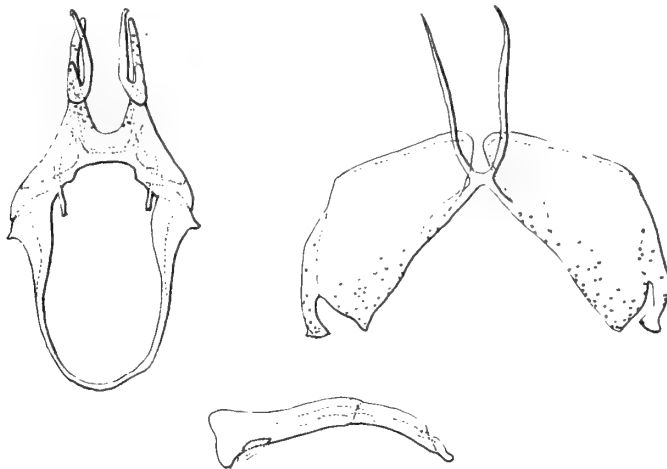


FIG. 213. *Chilades kedonga* (Grose Smith), ♂ genitalia.



*Wing shape.* Fore wing subtriangular, costa and outer margin convex ; hind wing oval, no tail. According to Courvoisier l.c., *Freyeria* differs from *Chilades* in the absence of androconia.

*Wing venation* (Text-fig. 340). Fore wing with 11 veins, 11 is bent towards 12 but not confluent with it.

*Male genitalia* (Text-fig. 214). Resembling closely those of *Chilades*, but the two processes of the uncus are less slender and shorter ; subunci long, with massive bases, bent at an acute angle about one-third from origin, apex ending in a shallow hook ; tegumen, pseudotergum and furca similar to those of *Chilades* ; valves fusiform, typical of Plebeinae, connected to the pseudotergum by a thin membrane, upper process ending in a comb, lower process with a rounded apex, penis elongate, slightly curved, widely open towards its slender apex, vesica with fine cornuti, uncus and valves especially the lower process, pilose.

The male genitalia of *minuscula* (Text-fig. 215) are like those of *trochylus* but differ as follows : Uncus a little more massive and with the apices of the lobes slightly recurved to form a hook ; subunci less robust, especially at the base ; comb of valves a little broader.

The species of *Freyeria* closely resemble those of *Chilades*. Both genera are distributed throughout almost the whole of the Old World. *Chilades* ranges from Egypt to the New Hebrides. *F. trochylus* is found in Europe in the Balkans and its range extends as far as Ferghana in Central Asia and in Africa to the Cape.

The caterpillar of *F. trochylus* has been observed by Pinhey (1949 : 120) in Rhodesia where it feeds upon *Heliotrope* and *Indigofera*.

LIST OF SPECIES OF *Freyeria*

- \**Freyeria minuscula* (Aurivillius), 1909.
- Freyeria parva* (Murray), see *trochylus*.
- \**Freyeria trochylus* (Freyer), 1844.
- parva* (Murray), 1874.

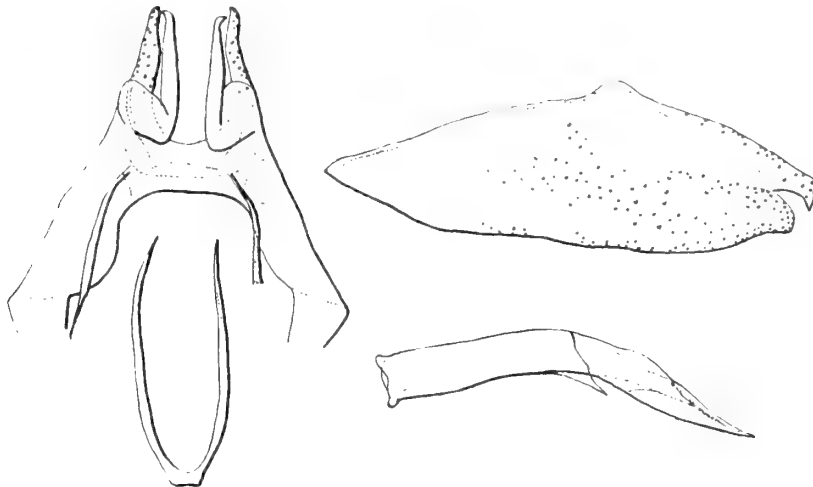


FIG. 214. *Freyeria trochylus* (Freyer), ♂ genitalia.

Genus *AZANUS* Moore

*Azanus* Moore, 1881, *Lep. Ceylon* 1 : 79 ; Pinhey, 1949 : 113 ; Swanepoel, 1953 : 58. Type-species : *Papilio ubaldus* Cramer, by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 364 ; 1925 : 468.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 158.

*Eyes* densely pilose ; palpi long, ascending, second segment long, laterally compressed, clothed below with long stiff white hair, third segment short, acuminate ; antennae slender, about two-thirds the length of the costa, club oval, flattened well differentiated ; thorax clothed below with long white silky hair ; ♂ fore leg, femur clothed with long white hair, tibia slightly shorter than the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex angular, outer margin convex from the apex to the end of vein 4, then straight ; inner margin straight, distinctly shorter than the costa ; hind wing oval, no tail.

*Wing venation* (Text-fig. 341). Fore wing with 11 veins ; 11 broadly anastomosed with 12.

*Male genitalia* (Text-fig. 216). Uncus shaped like a breast-plate, its posterior margin deeply notched, each angle bearing a small, weakly sclerotized lobe ; subunci short, massive, curved ; tegumen reduced to a narrow band ; vinculum narrow ; lower fultura crescentic ; valves very long, digitate, with an irregular distal edge and a slightly recurved apex ; penis cylindrical, very long, curved, ending in a sharp point ; vesica with fine cornuti ; uncus clothed with long fine hair ; coarser hair on the distal halves of the valves.

I have described and figured the genitalia of many species of *Azanus*. In all of them the uncus, subunci and tegumen are of the same shape as the corresponding

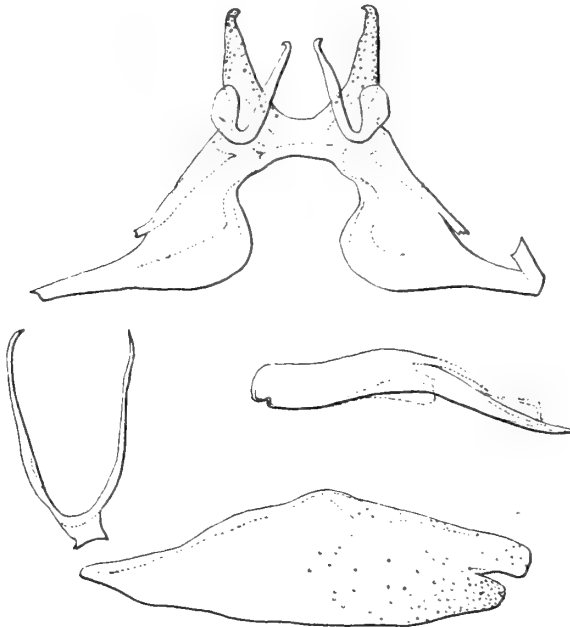


FIG. 215. *Freyeria minuscula* (Aurivillius), ♂ genitalia.

parts in *ubaldus*, but the valves and the penis are rather more complicated in shape than in the type of the genus. The valves, digitate in *jesous*, apex deeply incised in *sitalces*, wider than in *ubaldus* in the other species, have the distal portion broken up into more or less slender processes in *isis* and *natalensis*. The penis is not so long and more robust in these other species than in *ubaldus*, the ventral surface of the external portion is grooved and ends in a slender point, and in the groove there is a more or less massive cuneus, which is bare in *sitalces* and *mirza*, bristling with spinules in *jesous*. *Azanus isis*, which on account of the pattern of the upperside



FIG. 216. *Azanus ubaldus* (Cramer), ♂ genitalia.

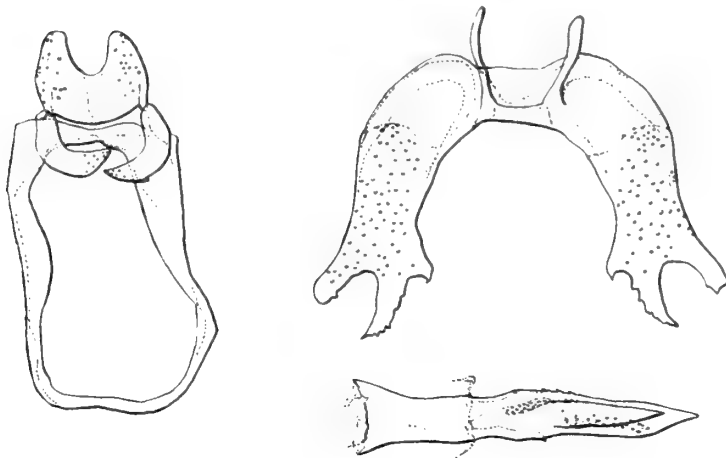


FIG. 217. *Azanus isis* (Drury), ♂ genitalia.

markings has often been placed in *Castalius*, is quite unrelated to that genus ; its genitalia (Text-fig. 217) are illustrated for comparison.

The early stages of *ubaldus*, *jesous* and *natalensis* have been described by Murray (1935 : 159-160), Jackson (1937, *Trans. R. ent. Soc. Lond.* **86** : 232-3) and Pinhey (1949 : 114). The caterpillars feed on species of Mimosaceae, e.g. *Acacia abyssinica*, *A. stenocarpa* and *A. karroo*.

#### LIST OF SPECIES OF *Azanus*

- Azanus agave* (Walker), see *jesous*.  
*Azanus artemides* (Stoll), see *ubaldus*.  
*Azanus benigna* (Möschler), see *moriqua*.  
*Azanus camillus* (Cramer), see *isis*.  
*Azanus coeruleoalbus* (Goeze), see *isis*.  
*Azanus ethode* (Walker), see *ubaldus*.  
*Azanus gamra* (Lederer), see *jesous*.  
*Azanus isarchus* (Fabricius), see *isis*.  
\**Azanus isis* (Drury), 1773.  
*coeruleoalbus* (Goeze), 1779 ; *camillus* (Cramer), 1780 ; *isarchus* (Fabricius), 1793.  
*Azanus itea* (Walker), see *ubaldus*.  
\**Azanus jesous jesous* (Guerin), 1847. Fig. genitalia, Stempffer, 1938, *Mission Omo 4* : 206.  
*gamra* (Lederer), 1855 ; *agave* (Walker), 1870.  
*Azanus jesous soalalicus* (Karsch), 1900.  
*Azanus macalenga* (Trimea), see *ubaldus*.  
\**Azanus mirza* (Plötz) 1880. Fig. genitalia, Stempffer, 1938, *Mission Omo 4* : 209.  
*occidentalis* Butler, 1888.  
*Azanus mirza* f. *deficiens* Dufrane, 1953, *Bull. Annl's Soc. R. ent. Belg.* **89** : 55.  
*Azanus mirza* f. *ornata* Dufrane, 1953, l.c. : 55.  
\**Azanus moriqua* (Wallengren), 1857.  
*sigillata* (Butler), 1876 ; *benigna* (Möschler), 1883.  
\**Azanus natalensis* (Trimen), 1887. Fig. Trimén, 1906. Fig. genitalia, Stempffer, 1938, *Mission Omo 4* : 209, (as *sigillatus*).  
*Azanus occidentalis* Butler, see *mirza*.  
*Azanus rubropuncta* Lathy, see *sitalces*.  
*Azanus sigillata* (Butler), see *moriqua*.  
\**Azanus sitalces* (Mabille), 1899. Fig. genitalia, Stempffer, 1938, *Mission Omo 4* : 207.  
*rubropuncta* Lathy.  
*Azanus thebana* (Staudinger), see *ubaldus*.  
\**Azanus ubaldus* (Cramer), 1782.  
*zena* (Moore), 1865 ; *artemides* (Stoll), 1782 ; *ethoda* (Walker), 1870 ; *itea* (Walker), 1870 ; *macalenga* (Trimen), 1887 ; *thebana* (Staudinger), 1894.  
*Azanus zena* (Moore), see *ubaldus*.

Genus *BREPHIDIUM* Scudder

*Brephidium* Scudder, 1876, *Bull. Buffalo Soc. nat. Sci.* **3** : 123 ; Swanepoel, 1953 : 81. Type-species : *Lycaena exilis* Boisduval (a Sonoran species) by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 369 ; 1925 : 473.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 150.

Eyes smooth ; palpi long, second segment ascending, long, laterally compressed, clothed with white scales and bearing below long erect black bristles, third segment horizontal, slender, acuminate ; antennae slender, about half the length of the costa, club oval, flattened, well differentiated ; thorax clothed below with long white silky hair ; ♂ fore leg, femur clothed below with long white hair, tibia about as long as femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, apex rounded, outer margin convex ; hind wing oval, no tail.

*Wing venation* (Text-fig. 342). Fore wing with 11 veins, 11 reduced to a short vein running from the upper edge of the cell to 12.

*Male genitalia* (Text-fig. 218). As Bethune Baker has already pointed out (1914, *Trans. ent. Soc. Lond.* **47** : 330), the structure of the ♂ genitalia of species of *Brephidium* differs considerably from that of all the other known Lycaenidae and it is difficult to establish the homologies of all the parts. Directly fused to the vinculum there is, on the posterior margin dorsally, an unpaired process of which the apex is deeply divided into four teeth, which may correspond to the uncus ; on either side of this process the two lobes of the tegumen take an abnormal form ; in the mount from which the figure was drawn they are spread out and flattened, but *in situ* they are convex and situated laterally ; parallel to and arising from the external edge of these lobes there is a long process of which the rounded apex bears five strong rigid bristles which look like sharp-pointed thorns ; vinculum narrow ; the two slender arms of the lower fultura are fused, not to the base of the valves, but at two-thirds from their base, valves small, oval, with rounded apices, widely fused to each other along their lower edges ; internal portion of penis bulbous, external portion beak-like, the two sharp points of the " beak " with finely serrate edges ; tegumen clothed with long hair, especially on its anterior edge, short fine hair on the apices of the valves.

Besides *exilis*, the genus *Brephidium* includes another Sonoran species, *B. pseudofea* Morrison and the S. African *B. metophis*.

The male genitalia of *B. metophis* Wallengren (Text-fig. 219) are of the same type

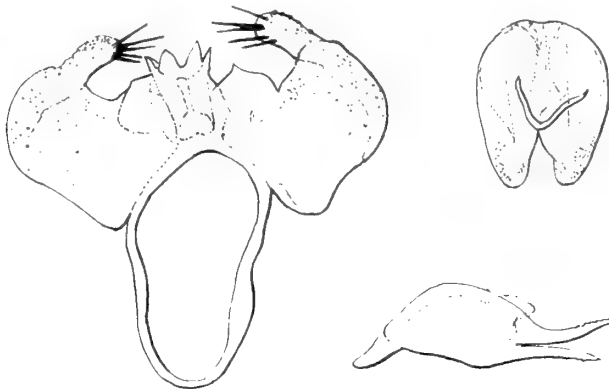


FIG. 218. *Brephidium exilis* (Boisduval), ♂ genitalia.

as those of *exilis*, but the central dorsal process is more developed and is shaped like a wide blade with a scarcely denticulate distal edge ; the lateral processes of the tegumen are thinner and bear at their apices two long rigid bristles ; besides these the posterior edge of the tegumen bears two more short processes, strongly recurved and with apices divided into sharp-pointed teeth ; the valves are pear-shaped ; the penis is of the same shape as that of *exilis*.

I have also examined the male genitalia of *B. pseudofea* (= *isopthalma* Herrich Schaffer) and found it to be of the same type as in the two species mentioned above. This uniformity of structure shows the close relationship of these three species, whose venations are identical and whose external appearances are alike.

The geographical distribution of the genus *Brephidium* covers S. Africa (Cape of Good Hope, Natal and Delagoa Bay), the Sonoran region (Florida, Louisiana, New Mexico, Texas and California) and the northern part of the neotropical region (Mexico, West Indies, Central America and Venezuela). It is almost certain that this is a very ancient genus judging by the archaic structure of its male genitalia, e.g. the presence of rigid bristles and the beak-like apex of the penis, structures which elsewhere are only found in species of the genus *Zizula*, a genus also spread over the Old World and S. America.

#### LIST OF SPECIES OF *Brephidium*

\**Brephidium metophis* (Wallengren), 1860. Fig. Trimen, 1906.

#### Genus **ORAIIDIUM** Bethune Baker

*Oraidium* Bethune Baker, 1914, *Trans. ent. Soc. Lond.* **47** : 330 ; Swanepoel, 1953 : 80. Type-species : *Lycaena barberae* Trimen, by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 369 ; 1925 : 474.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 163.



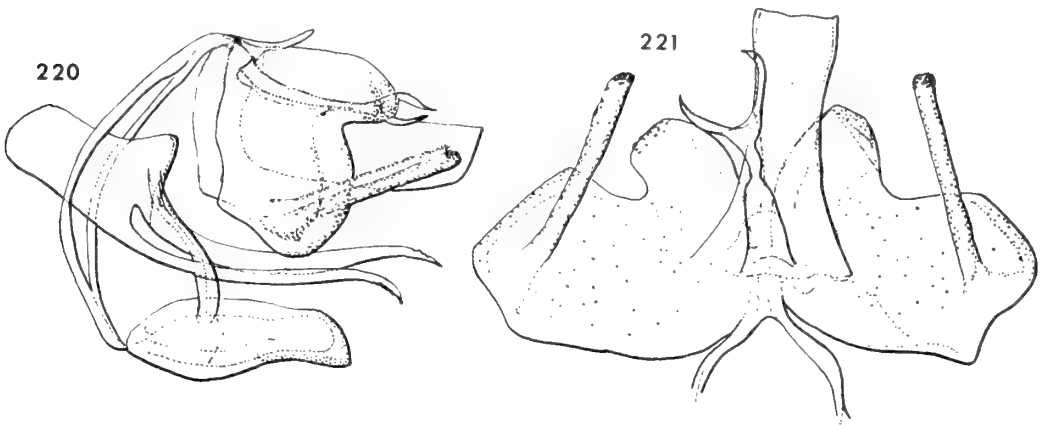
FIG. 219. *Brephidium metophis* (Wallengren), ♂ genitalia.

*Eyes* glabrous, palpi long, ascending, second segment laterally compressed, clothed below with white scales and long black stiff hair, third segment long, slender; antennae slender, half the length of the costa, club oval, well differentiated; ♂ fore leg, tibia with a spur and almost as long as femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, costa evenly convex, apex rounded, outer margin convex, hind wing oval, no tail.

*Wing venation* (Text-fig. 343). Bethune Baker (1914 : 330) described the venation of the fore wing of *barberae* in these words, " Veins 6 and 7 arise from the upper apex of the cell and 7 is not stalked, 8 and 9 are absent, 11 is bent up to almost or quite touch 12 ". The venation of *barberae* is probably not stable and Bethune Baker must have examined an aberrant specimen. In the five specimens that I have examined the venation is as follows :—Fore wing with 10 veins; the cell short; 3 from before the lower angle of the cell; 4 from this angle; 5 equidistant from 6 and 4; 6 from the upper angle of the cell; 7 from rather far before this angle, ending in the apex; 8 and 9 absent; 10 from the upper edge of the cell; 11 reduced to a short cross-vein between 10 and 12.

*Male genitalia* (Text-fig. 220, side view; parts *in situ* Text-fig. 221) postero-ventral view of the dorsal structures under higher magnification with the parts spread out and flattened (see also Bethune Baker, 1914, fig. 41). In general plan the structure is similar to that of the ♂ genitalia of *B. exilis*. Directly fused to the vinculum there is a broad grooved blade stretching horizontally to the rear; above and parallel to this blade there is a process resembling a long-handled fork with two sharp-pointed prongs; lobes of tegumen very large, convex, each with a deep depression in its posterior edge, and a long digitate process on its inner surface which, instead of surrounding the external edge as in *Brephidium*, is directed to the rear so that its apex protrudes considerably beyond the posterior edge of the tegumen; vinculum narrow, lower fultura formed of two long slender arms which are fused to the valves, not at their base but at one-third from the base; valves small, oval, their lower margins fused throughout the first third from origin; penis very specialized, internal portion massive, saddle-shaped, external portion divided into two slender processes which diverge slightly apically where both the upper and lower edges are slightly serrate; posterior margin of tegumen clothed in long hair, especially in the middle, the digitate processes are also clothed with hair along the whole of their length and bear a pencil of long stiff hair at their apices, the lobes only sparsely clothed with short hair, distal portion of valves clothed with finer and shorter hair than that on the posterior edge and processes of the tegumen.



FIGS 220-221. *Oraidium barberae* (Trimen), ♂ genitalia.

The male genitalia of *barberae*, when examined *in situ* and without dissection, are confusing as the long hairs of the upper parts hide the remainder ; it is for this reason probably that the presence of the " long-handled fork " escaped the notice of Bethune Baker, who would certainly have mentioned it had he seen it ; his figure 41 gives a very imperfect idea of the structure of the genitalia.

The genus *Oraidium* is evidently closely related to *Brephidium*, but it is monospecific and is not found in the New World.

Desmond Murray (1935 : 163) considered *barberae* to be a form of *B. metophis* in alluding to the instability of its venation. Comparison of the male genitalia of the two species renders such an hypothesis quite untenable.

#### LIST OF SPECIES OF *Oraidium*

\**Oraidium barberae* (Trimen), 1868.

#### Genus **ZIZEERIA** Chapman

*Zizeeria* Chapman, 1910, *Trans. ent. Soc. Lond.* **43** : 480 ; Pinhey, 1949 : 121 ; Swanepoel, 1953 : 74.

Type-species : *Lycaena karsandra* Moore, by original designation.

*Cupido* Schrank (partim) : Aurivillius, 1898 : 379 ; 1925 : 495.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 183.

Eyes bearing short, very fine hair ; palpi long, slightly ascending, second segment long, laterally compressed, clothed below with scales and long stiff hair, third segment shorter, slender, acuminate ; antennae slender, white-annulated, more than half the length of the costa,

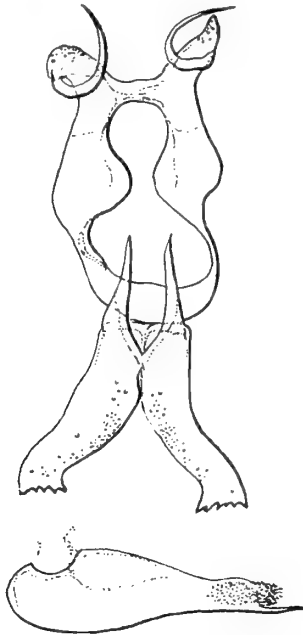


FIG. 222. *Zizeeria karsandra* (Moore), ♂ genitalia.



club flattened, well differentiated ; thorax clothed below with long white silky hair ; legs : ♂ fore leg, tibia shorter than the femur, tarsus unsegmented.

*Wing shape.* Fore wing subtriangular, costa evenly convex, apex rounded, outer margin convex, hind wing oval, no tail, anal angle obtuse.

*Wing venation* (Text-fig. 344) (see also Chapman, 1910, *Trans. ent. Soc. Lond.* **43**, pl. 54, fig. 14) : fore wing with 11 veins, 11 fused with 12 for part of its length.

*Male genitalia* (Text-fig. 222) (see also Chapman, 1910, *Trans. ent. Soc. Lond.* **43**, pl. 55, fig. 20 and pl. 56, fig. 24). Uncus composed of two small lobes fused to the tegumen on either side of the median depression in its posterior edge, subuncus long, slender, curved, tapering gradually to the apex which is not hooked ; tegumen large, the median band strongly sclerotized on its anterior and posterior edges ; vinculum broad ; lower fultura formed of two robust arms fused to the base of the valves ; valves fused together for the first quarter of their length, oblong, apices strongly serrate and truncate at right angles to the axis of the valves ; penis shaped like an elongated flask ending in a long fine spine ; vesica with numerous cornuti ; uncus clothed with fine hair ; thick stiff hair on the lower borders of the valves, especially near their bases, the distal portions more sparsely clothed with shorter weaker hair.

The male genitalia of *knysna* (Text-fig. 223) (see also Chapman, 1910, pl. 56, figs 22, 23) differ from those of *karsandra* solely by the shape of the valves, which are slightly wider and whose serrated apex is obliquely truncate. Steven Corbet (*in litt.*) considered *karsandra* and *knysna* as a collective species, *karsandra* inhabiting the eastern region (N.E. Arabia, Palestine, Egypt, E. Algeria and Sudan), *knysna* the western and southern regions (Spain, Canary Islands, Morocco, W. Algeria, S. Arabia, Sudan and tropical Africa down to S. Africa, Madagascar and Mauritius).

However the two species (or subspecies) have never been captured together and no specimens are known in which the valves have an intermediate shape.

The early stages of *knysna* have been described by Dickson (1944, *J. ent. Soc. sth. Afr.* **7** : 96). The caterpillar feeds on a species of *Euphorbia*. According to Pinhey (1945 : 121) in Rhodesia it feeds on *Oxalis*, *Zornia*, *Medicago*, *Euphorbia* and *Amaranthus*.

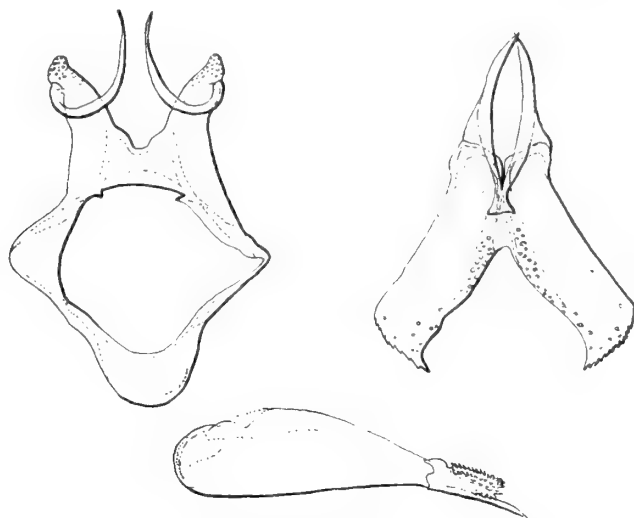


FIG. 223. *Zizeeria knysna* (Trimen), ♂ genitalia.

LIST OF SPECIES OF *Zizeeria*

\**Zizeeria karsandra* (Moore), 1865.

\**Zizeeria knysna* (Trimen), 1862.

*lysimon* (Hübner), 1803, invalid homonym of *lysimon* (Stoll), 1790.

*Zizeeria lysimon* (Hübner), see *knysna*.

Genus **ZIZINA** Chapman

*Zizina* Chapman, 1910, *Trans. ent. Soc. Lond.* **43** : 482 ; Swanepoel, 1953 : 75. Type-species :

*Lycaena labradus* Godart (an Indo-Australian species) by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 378 ; 1925 : 495.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 181.

*Eyes* clothed in short, very fine hair ; palpi long, slightly ascending, second segment long, laterally compressed, clothed below with long stiff bristles, third segment very much shorter, slender, acuminate ; antennae slender, somewhat more than half the length of the costa, club flattened, well differentiated ; thorax clothed below with long white silky hair ; ♂ fore leg, tibia a little shorter than the femur, tarsus unsegmented.

*Wing shape.* Fore wing subtriangular, costa evenly convex, apex rounded, outer margin weakly convex, hind wing oval, no tail.

*Wing venation* (Text-fig. 345). Fore wing with 11 veins ; 11 partially anastomosed with 12.

*Male genitalia* (Text-fig. 224). Uncus composed of two oval lobes fused to the tegumen on either side of the median depression in its terminal margin ; subunci long, slender, curved, no apical hook ; tegumen and vinculum large, lower fultura composed of two slender arms fused to the base of the valves ; valves oblong, upper process much longer than the lower one and with digitate apex ; penis ovoid, its extremity cylindrical with a slender sharp point ; vesica with numerous cornuti ; uncal lobes clothed with long fine hair, at the base of each valve there is a very long, very strong, sharp-pointed bristle and in the middle of the anterior edges of the valves there are a series of long bristles less robust than the one at the base.

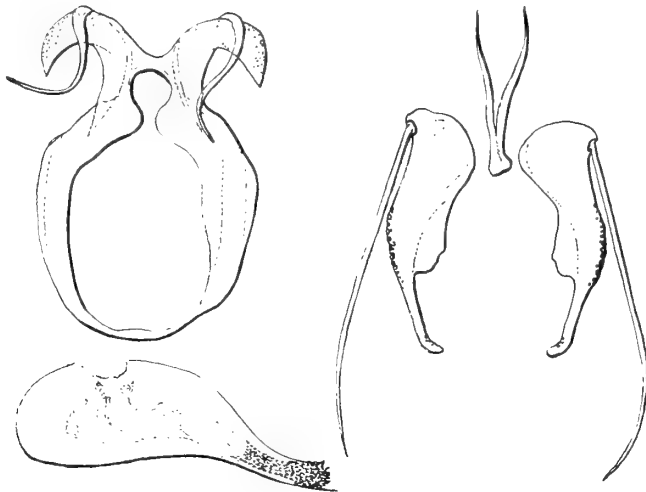


FIG. 224. *Zizina labradus* (Godart), ♂ genitalia.

The male genitalia of *Z. antanossa* Mabille (Text-fig. 225) resemble closely those of *labradus* but they differ from them in the following particulars :—

- (1) The apex of the upper process of the valve is much shorter, more robust and sickle-shaped.
- (2) The basal bristle of the valve has a lanceolate apex.
- (3) The other valvular bristles are borne near the apex of the upper process and not along the middle part of the anterior edge.
- (4) The base of the penis is less swollen and the distal portion less elongated (the figures illustrate two different views of the penis, one of them with the vesica exerted after copulation).

The male genitalia of *Z. antanossa* are almost identical with those of *Z. indica* Murray, from India and Ceylon. According to Steven Corbet, *antanossa* of Madagascar and Africa, *indica* Murray, *labradus* Godart of Australia and *oxleyi* C. and R. Felder of New Zealand should be considered as forms of one collective species, *otis* Fabricius.

The two genera *Zizeeria* and *Zizina* are closely related and are the only genera in the subfamily Zizeerinae, which probably has a very ancient origin. This would explain its wide geographical distribution.

LIST OF SPECIES OF *Zizina*

\**Zizina antanossa* (Mabille), 1877. Fig. Mabille, 1885 : 87.

*publia* (Hulstaert), 1924.

*Zizina publia* (Hulstaert), see *antanossa*.

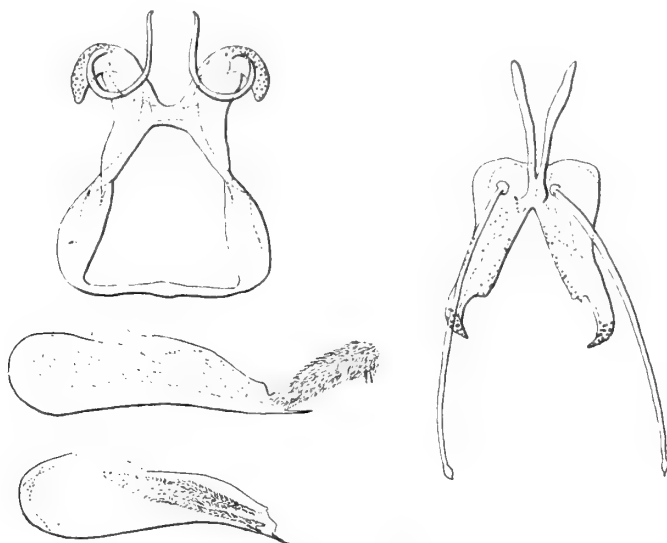


FIG. 225. *Zizina antanossa* (Mabille), ♂ genitalia.

Genus *ZIZULA* Chapman

*Zizula* Chapman, 1910 : 483 ; Pinhey, 1949 : 121 ; Swanepoel, 1958 : 74. Type-species :

*Papilio hylax* Fabricius = *Lycaena gaika* Trimen, by original designation.

*Cupido* Schrank (partim) ; Aurivillius, 1898 : 378 ; 1925 : 495.

*Lycaena* Fabricius (partim) ; Murray, 1935 : 182.

*Eyes* smooth ; palpi long, strongly ascending, second segment laterally compressed, clothed with scales and below with long stiff hair, third segment long, slender, acuminate ; antennae white-annulated, about two-thirds the length of the costa, club ovoid, well differentiated ; thorax clothed below with long white silky hair ; abdomen long, extending well beyond the anal angle of the hind wing ; ♂ fore leg, tibia longer than the femur, tarsus short, unsegmented, strongly spinose below.

*Wing shape.* Fore wing subtriangular, elongate, costa evenly convex, apex rounded, outer margin convex, hind wing oval, elongate, no tail.

*Wing venation* (Text-fig. 346). Fore wing with 11 veins ; 11 reduced to a short cross-vein between the upper edge of the cell and 12.

*Male genitalia* (Text-fig. 226) (see also Chapman, *Trans. ent. Soc. Lond.* **43**: 493, pl. 59, figs. 33 ; and 35) : uncus bifid, reminiscent of the Plebeinae, the two lobes with rounded apices ; subunci curved, robust, apex blunt, not hooked, tegumen large, vinculum narrow ; lower fultura composed of a simple narrow blade, bent at right angles, bifid at its tip (in the mount from which the drawing was made the fultura had adhered to the penis) ; valves reduced, the upper process, which is folded over the lower one strongly sclerotized and ending in a long, curved digitate process crowned with a bundle of small spines, the lower process weakly sclerotized, and with a rounded apex ; at the apex of the anterior edge of the valve there is an enormous long and rigid bristle, probably composed of an agglomeration of hairs because, under high magnification, it seems longitudinally channelled, and is wide at its apex, which is irregularly truncate ; besides this large bristle there are 6 to 8 others, more slender and less rigid, but nearly equal in length (for the sake of the clarity only the points of insertion of these bristles are shown in the figure) ; penis short, massive, ending in two long beak-like points, the upper one with a smooth outer edge, and a grooved inner edge, the lower one with a slightly serrated outer edge ; *in situ* the lower part lies in the groove of the upper part which, at its base, has on each side a small rugose triangular excrescence ; uncal lobes and distal portion of the lower process of the valves pilose.

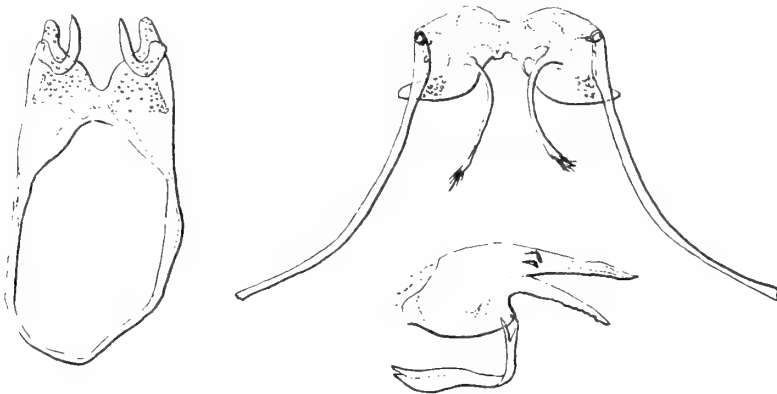


FIG. 226. *Zizula hylax* (Fabricius), ♂ genitalia.

As I have already pointed out (1934, *Bull. Soc. ent. Fr.* 1933 : 325-328) the genus *Zizula* includes, besides *gaika*, *tulliola* Godman & Salvin, whose male genitalia closely resemble those of *gaika*. *Z. tulliola* is found in Mexico, Guatemala, Venezuela and Brazil. Hence the habitat of the genus *Zizula* embraces India, Java, Sumatra, the Islands of the Indian Ocean, tropical and equatorial Africa and America, i.e. almost the whole of the ancient Gondwana.

I find it difficult to determine with certainty the exact relationship of *Zizula*. Like *Zizina* it has a huge bristle on the valve, but the tegumen and especially the penis, have a totally different structure. A penis of this type is, as far as I know, found only in *Brephidium*, whose habitat is also Southern Africa (*metophis*) and tropical America (*exilis*, *pseudofea*) but the dorsal structures of *Zizula*, which are of a simple type, are quite unlike the complex tegumen of *Brephidium*. Nevertheless the similarity in the structure of the penis, and their identical habitats, make me inclined to think that these two genera are somewhat related. Both are certainly of ancient origin, dating from before the breaking up of Gondwanza.

According to Pinhey (1949 : 121) the caterpillar of *gaika* has been found on flowers of *Oxalis* species.

LIST OF SPECIES OF *Zizula*

*Zizula cleodora* (Walker).

*Zizula gaika* (Trimen), see *hylax*.

\**Zizula hylax* (Fabricius), 1775.

*lysimon* (Wallengren), 1857 ; *gaika* (Trimen), 1862 ; *mylica* Guenée, 1863 ; *cleodora* (Walker), 1870 ; *pygmoea* (Snellen), 1876 ; *perparva* (Saalmuller), 1889.

*Zizula lysimon* (Wallengren) see *hylax*.

*Zizula mylica* (Guenée), see *hylax*.

*Zizula perparva* (Saalmuller), see *hylax*.

*Zizula pygmoea* (Snellen), see *hylax*.

Genus **ACTIZERA** Chapman

*Actizera* Chapman, 1910 : 483 ; Pinhey, 1949 : 121 ; Swanepoel, 1953 : 121. Type-species :

*Lycaena atrigemmata* Butler, selected by Hemming, 1929, *Ann. Mag. nat. Hist.* (10) 3 : 220.

*Cupido* Schrank (partim) Aurivillius, 1898 : 379 ; 1925 : 495.

*Lycaena* Fabricius (partim) Murray, 1935 : 183.

*Eyes* smooth ; palpi long ; ascending, second segment long, laterally compressed, clothed below with scales and long stiff hair, third segment long, slender, acuminate ; antennae white-annulated, more than half the length of the costa, club ovoid, well differentiated ; abdomen long, slender, extending beyond the anal angle ; ♂ fore leg, tibia as long as the femur, tarsus unsegmented, finely spinose below.

*Wing shape.* Fore wing subtriangular, outer margin convex, hind wing oval, no tail, anal angle obtuse.

*Wing venation* (Text-fig. 347). Fore wing with 11 veins, 10 and 11 free from the upper edge of the cell.

*Male genitalia* (Text-fig. 227) (see also Chapman, 1910, pl. 59, fig. 36 and pl. 60, fig. 39): uncus composed of two small lobes with rounded apices, tightly fused to the tegumen on either side of the shallow median depression of its posterior margin; subunci rather short, curved, about the same diameter from base to blunt apex, no terminal hook; tegumen large; lower fultura forked with two slender prongs; valves oblong, the distal portion digitate, bent upwards, apex rounded, a row of fine spines on the distal edge; valves attached below not only by their base, but also by an expansion of the upper process; penis elongate, swollen at its base, the external portion short; vesica with numerous spines; uncal lobes and lower edge of valves with long hairs.

The male genitalia of *lucida* (see Chapman, 1910, pl. 60, fig. 40) are similar to those of *atrigenmata*, differing by the serrated lower edges of the valves, the penis shorter and more swollen at its base. I have not been able to examine the type of *Zizera drucei* Bethune Baker, but I believe it to be the Madagascan race of *lucida*. A specimen from Madagascar which I dissected has an armature similar to that of *lucida*. In the genitalia of *stellata* Chapman 1910, (fig. 38) the uncal lobes are more elongate, the subunci longer and more slender, the distal portion of the valve less curved, the apical edge smooth, the penis much longer but less swollen at its base.

I do not think there is any real relationship between *Actizera* and the Zizeerinae, i.e. *Zizeeria* and *Zizina*. The only characters they have in common are their small size and a certain external similarity. The presence of a white streak on the underside of the hind wings gives no valid information as to their relationship; this character cannot have any systematic value as it varies in species of the same genus, and even in specimens of the same species, as for example, in the palaeartic genus *Agrodiaetus*.

The geographical distribution of *Actizera* (Madagascar, South and East Africa) is much less extensive than that of *Zizeeria*; maybe *Actizera* is a branch of the holarctic Glaucopsychinae in the Ethiopian fauna. Chapman included in *Actizera* the species described by Herrich Schaeffer as *Lycaena panagaea*, of Asia Minor, a species now generally assigned to the genus *Turanana* (Glaucopsychinae).

The caterpillar of *A. lucida* has been observed by E. C. G. Pinhey (1949: 122).

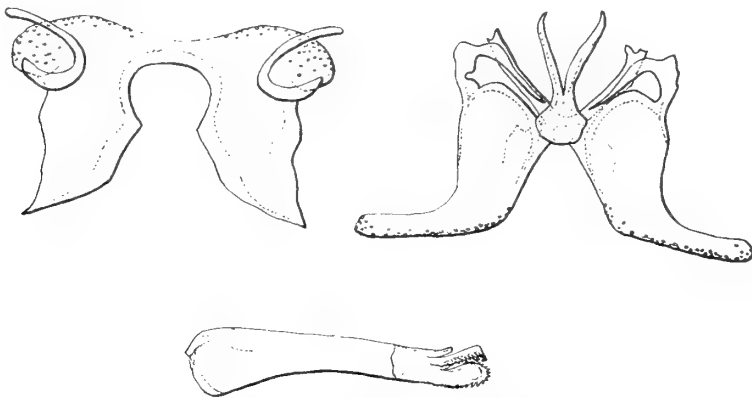


FIG. 227. *Actizera atrigenmata* (Butler), ♂ genitalia.

LIST OF SPECIES OF *Actizera*

- \**Actizera atrigemmata* (Butler), 1878. Fig. Mabille, 1885 : 87.
- \**Actizera lucida lucida* (Trimen), 1883. Fig. Trimen, 1906.
- Actizera lucida drucei* (Bethune Baker), 1906.
- \**Actizera stellata* (Trimen), 1883. Fig. Trimen, 1906.

Genus *LYCAENA* Fabricius

*Lycaena* Fabricius, 1807, *Illiger. Mag.* **6** : 285 ; Swanepoel, 1953 : 148. Type-species : *Papilio phlaeas* Linnaeus (a palearctic species), designated by Curtis, 1828, *Brit. ent.* **5** : pl. 12.

*Heodes* Dalman : Aurivillius, 1898 ; 382 ; 1925 : 497 ; Murray, 1953 : 139.

*Eyes* smooth ; palpi long, divergent, second segment long, laterally compressed, clothed with white scales and bearing below long black bristles, third segment more slender with obtuse apex ; antennae slender, three-fifths the length of the costa, club elongate, fusiform ; thorax clothed below with long white silky hair ; ♂ fore leg, femur clothed with long white hair, tibia shorter than the femur, tarsus unsegmented, finely spinose below, metatarsus of hind legs swollen.

*Wing shape.* Fore wing triangular, costa convex at its base, then straight, apex acute, outer margin slightly convex ; hind wing suboval, somewhat produced at the anal angle in *phlaeas* but not in *orus*.

*Wing venation* (Text-fig. 348). Fore wing with 11 veins.

*Male genitalia* (Text-fig. 228). Uncus composed of two elongate oval lobes well separated from the tegumen, to which they are attached narrowly by their bases on either side of the median depression ; subunci long, evenly curved, slightly swollen in the middle ; tegumen reduced to a narrow band, vinculum rather narrow, with a tapering saccus ; lower fultura composed of two lamellae obliquely truncated at their apices and fused by their bases to the base of the valves, valves oblong, widened apically with a rounded spinose apex ; penis elongate,

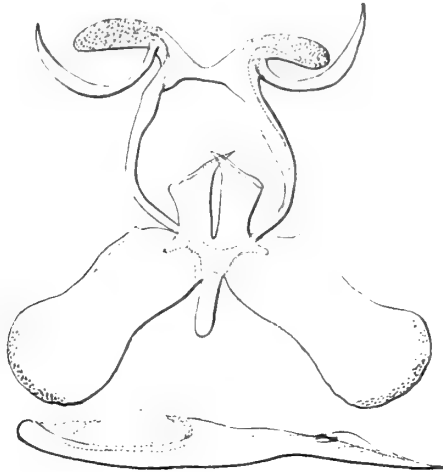


FIG. 228. *Lycaena phlaeas pseudophlaeas* (Lucas), ♂ genitalia.

lower portion curved like a pistol-stock, widely open on its upper surface, apex pointed ; vesica enclosing a short spine ; uncus densely clothed with fine hair ; just a few hairs on the upper edge of the valves near the apex.

The male genitalia of *abottii* (see Stempffer, 1938, *Mission Omo* 4 : 210) resemble so closely those of *phlaeas* that it is permissible to wonder whether it is a true species or a geographical subspecies of *phlaeas*. Those of *orus* are of the same type except that the apices of the valves, instead of being rounded, are obliquely truncate and irregularly dentate, and the lower fultura consists of two narrow lamellae with pointed apices.

The biology of the European races of *phlaeas* is well known. The early stages of *orus* have been described by Murray (1935 : 140, fig. 86) and Dickson (1947, *J. ent. Soc. sth. Afr.* 10 : 127).

One can understand how, during the colder geographical periods, the genus *Lycaena* managed to reach South Africa by way of the Mountains of Abyssinia and East Africa. It is much more difficult to explain how it reached New Zealand, since in Asia it extends no further than the Himalayas and Sze Chuan being effectively replaced by *Heliophorus* in further Asia.

#### LIST OF SPECIES OF *Lycaena*

\**Lycaena abottii* (Holland), 1892. Fig. Holland, 1895.

*Lycaena arcas* (Fabricius), see *orus*.

\**Lycaena orus* (Cramer), 1780.

*arcas* (Fabricius), 1787.

\**Lycaena phlaeas pseudophlaeas* (Lucas), 1866.

*phlaeas ethiopica* (Poulton), 1921 ; *phlaeas menelicki* (Thierry Mieg), 1911.

*Lycaena phlaeas ethiopica* (Poulton), see *phlaeas pseudophlaeas*.

*Lycaena phlaeas menelicki* (Thierry Mieg), see *phlaeas pseudophlaeas*.

*Lycaena phlaeas shima* Gabriel, 1954, *Exped. S.W. Arabia* 1937-38 : 38.

#### CONCLUSION

Now that I have set out in detail the generic characters of the Ethiopian Lycaenidae, the time has come to draw conclusions from my studies, and to attempt an outline of classification based on phylogeny, one which will, I hope, give a more accurate picture of the family than that given by the existing classification.

What are the essential characters that should form the basis of a classification ? This poses the question that is at the root of the problem, because differing conclusions will result from differing choices of prime characters. Further, whatever these results may be, in terms of major taxonomic units, many of the latter will not be completely homogeneous, for not all the included species will display all the chosen characters ; one can but hope to reach an approximation to a true phylogeny, because the fossil record which could prove or disprove it, is lacking.

Aurivillius chose venation as the prime factor and I quote below the characters



he chose when he divided the Lycaenidae into sub-families (1914, in Seitz, **13**: 297).

A. Fore wing nearly always with 12 veins, of which veins 7 and 9 arise from vein 8 behind the apex of the cell.\* Rarely as in (*Eresina* and *Iridana*), vein 7 is wanting, so that only 11 veins are present, in which case either vein 10 arises from the stalk of vein 8 and 9, or vein 8 is semicircularly bent before its end. Eyes naked. Hind wing always rounded, without tail appendages, anal lobe or hairs tufts **LIPTENINAE**

B. Fore wing nearly always with 10 or 11 veins, vein 7 and sometimes also vein 9 being absent ; vein 10 always free from the anterior margin of the cell. Rarely (e.g. in *Aphnaeus*, *Phasis*, *Erikssonina* and the male of some species of *Iolaus*) 12 veins are present, in which case however, the hind wing is tailed, lobed or angled **LYCAENINAE**

Note the vagueness of the criteria : The Lipteninae have "nearly always" 12 veins, the Lycaenidae "nearly always" 10 or 11 veins. For additional distinguishing characters, Aurivillius has recourse to the pilosity of the eyes, and the shape of the hind wings. However, although it is true that all the Lipteninae have smooth eyes, this character reappears in many genera of Lycaeninae, and especially in certain Theclinae ; further, many species of Lycaeninae (*sensu* Aurivillius) have rounded hind wings devoid of tails, lobes and hair tufts.

Aurivillius subdivided his two subfamilies into genera, usually on venational characters, sometimes on shape of wings, or the palpi or the antennae. It is undeniable that these characters are easily seen and so are convenient for the rapid determination of specimens, but in my opinion there are serious objections to the employment of venational characters as basic criteria, for example :—

(1) At the species level, venational aberrations that are certainly of little importance occur fairly frequently in different individuals. I have given examples in *Anthene*, *Neurellipes* and *Triclema* (1944, *Revue fr. Ent.* **10** : 63) and I feel sure that the examination of long series of specimens would reveal their occurrence in other genera.

(2) If we classify species into genera solely on minor venational differences we shall have to split up certain natural groups (e.g. *Iolaus*, *Phasis* and *Anthene*), of which the homogeneity on other grounds is evident.

(3) In many cases, genera characterized by a uniform venation will include species whose male genitalia are completely dissimilar, indicating a very distant phylogenetic origin. The most striking example of such an artificial genus is *Cupido* (*sensu* Aurivillius) which includes species belonging to several distinct sub-families, e.g. to Lampidinae, Plebeiinae, Zizeerinae, etc., but not a single true *Cupido*.

I agree with Warren (1947, *Entomologist* **80** : 208 *et seq.*) that we shall arrive at a more accurate classification by adopting as our basic characters (1) the shape of the legs, (2) the structure of the male genitalia. Warren makes use of the structure of the prothoracic legs to subdivide the superfamily Papilionoidea into three groups of families :—

\* An error of observation : It should read : veins 8 and 9 arise from vein 7.

- A. Primitive family group : Prothoracic legs functional in both sexes.
- B. Advanced family group : Prothoracic legs degenerate in the male, perfect in the female.
- C. Specialized family group : prothoracic legs degenerate in both sexes.

He subdivided Group A into Papilionidae, Pieridae and Lycaenidae. As characters of the last he gives : Prothoracic legs slightly smaller in male than in female ; venation of fore wings specialized, veins being reduced in number (10 or 11) ; claws appendiculate and bifid.

This characterization of the Lycaenidae needs some qualification. It is probable that Warren was thinking solely of the holarctic fauna when he refers to " 10 or 11 veins ", for most of the Lipteninae, and a few genera of the Lycaeninae (*sensu* Aurivillius) have 12 veins in the fore wing. Also the prothoracic legs of the Lycaenidae have more than a " small " difference in size between the sexes. In almost all the genera of this family, the five segments of the fore tarsus of the male are fused to form one single segment, which is often rather slender, slightly curved, bears fine spines or short, stiff hair beneath, and has no distinct terminal claw. This seems to be the first stage of regressive evolution which culminates in the degenerate legs of the male of the Riodinidae. I think, the two families are more closely related than Warren assumes when he puts the Lycaenidae in his Group A and the Riodinidae in Group B.

As far as I know, the genera of the Lycaenidae which provide exceptions to the rule are :—*Artopoetes* Chapman, *Coreana* Tutt, *Japonica* Tutt, *Liphyra* Westwood, *Euliphyra* Holland, *Aslauga* Kirby, *Paraslauga* Bethune Baker, *Egumbia* Bethune Baker, *Lachnocnema* Trimen, *Thestor* Hübner and *Theclopsis* Godman & Salvin. The first three belong to the Far Eastern fauna, *Liphyra* is an Indo-Malayan genus and *Theclopsis* is a neotropical genus ; as I am not sufficiently well acquainted with these genera I will say no more about them. The other six genera belong to the Ethiopian fauna, and I am of the opinion that they should be taken out of this family, since they differ from all the other genera by an extremely important character which best characterizes the family. *Liphyra*, *Euliphyra*, *Aslauga* and *Paraslauga* should form the subfamily Liphyrinae described by Bethune Baker (1924, *Trans. ent. Soc. Lond.* 1924 : 199-238). In this subfamily, Bethune Baker also included the genus *Teratoneura*, but as I have pointed out in my description of that genus (p. 73), Bethune Baker must have made a mistake since the fore tarsus of the male of *Teratoneura isabelle* Dudgeon is quite ordinary and unsegmented. On the other hand I propose that the genus *Egumbia*, in which the fore tarsus of the male is five-segmented, and bears well developed terminal claws, be included in this subfamily.

When we compare the male genitalia of the four Ethiopian genera of the Liphyrinae we find the following similarities and variations :—

- Tegumen :— *Euliphyra* : well developed, a slight notch in the posterior margin, a wide expansion of the anterior margin.  
*Aslauga* : reduced in size, a rather deep notch in the posterior margin, a triangular expansion of the anterior margin.

*Paraslauga* : well developed, subtriangular, no expansion of the anterior margin.

*Egumbia* : fairly well developed, a rounded depression in the posterior margin, a rounded expansion of the anterior margin.

Subunci :— Long, robust and curved in *Euliphyra*, absent in the other genera.

Vinculum :— Prolonged cephalad to form a large rounded saccus in all genera.

Lower fultura :—Present in all four genera.

Valves :— Reduced in size in *Euliphyra*, well developed in the other genera.

Penis :— Small, elongate, subcylindrical in *Euliphyra*, more robust and enclosing numerous cornuti in the other genera.

Thus we see that, although the male genitalia are not identical, there is no radical divergence from the type. As a complementary character we may note that the fore wing always has 12 veins, of which vein 7 is stalked on 6 in *Euliphyra* but arises independently in the other genera. In my opinion the sub-family Liphyrinae is a homogeneous group, though the genus *Euliphyra*, both by its venation and by its male genitalia, seems more closely related to the Indo-Australian genus *Liphyra* than to the other three Ethiopian genera.

Of the Ethiopian genera with a segmented fore tarsus in the male, there remain *Lachanocnema* and *Thestor*, two genera that cannot be included in the Liphyrinae. Their male genitalia show at first glance one striking difference, viz : the presence in *Thestor* of two long, curved, pointed processes on the posterior margin of the uncus but, as I have already pointed out, such median expansions of the uncus have little systematic value ; for instance, they recur in some species of palaeartic *Thecla* and *Chaetoprocta*, which cannot for that reason alone be separated generically from allied species. Apart from this, the male genitalia of *Lachnocnema* and *Thestor* are very similar ; tegumen subrectangular, subunci curved, long and rather slender, vinculum narrow and with a saccus, valves oblong with peculiar articulated processes, penis long, slightly curved and tapering gradually in its external portion ; also the venation is almost identical, except that vein 7 of the fore wing arises independently in *Lachnocnema*, whereas it is stalked low down on vein 6 in *Thestor*. Finally, species of these two genera resemble one another to some extent in their outward appearance with their stout bodies and dull colours, which remind one of the Hesperidae. Bethune Baker (1924 : 203) had already pointed out the close relationship of these two genera which I propose to unite in the subfamily Thestorinae.

We now have to deal with the genera in which the fore tarsus of the male is unsegmented, and these compose the greater part of the family. In order to group them into subfamilies, we shall have recourse in the first place to characters derived from their male genitalia.

In *Alaena* Boisduval, *Telipna* Aurivillius, *Pentila* Westwood, *Ornipholidotos* Bethune Baker and *Liptenara* Bethune Baker the ventral elements have undergone an important modification. The valves, instead of being independent organs articulated to the vinculum close to the saccus, have become mere expansions of, and more or less separated from, the vinculum, symmetrical in *Alaena* and *Telipna*, always asymmetrical in *Pentila*, *Ornipholidotos* and *Liptenara*. In these last three

genera the dorsal elements are also asymmetrical and subject to individual variations especially in *Ornipholidotos*. In *Telipna* and *Ornipholidotos* we note also the presence of paired organs articulated to the tergal-sternal suture, these being symmetrical in *Telipna*, asymmetrical in *Ornipholidotos*. In the females of *Pentila* and *Ornipholidotos* the ostium bursae is situated laterally in relation to the ostium oviductus and I suspect that the same holds good for *Liptenara*, but I have not had the opportunity to examine females of this genus. As a complementary character we note a certain similarity in the wing venation of the five genera : the fore wing has 12 veins, there is a short precostal vein in the hind wing and veins 3 and 4 are widely separated at their origins. In *Pentila*, *Ornipholidotos* and *Liptenara* the cell is much elongated and extends beyond the middle of the wing. This combination of characters seems to me to justify the grouping of these five genera into a subfamily, the Pentilinae. Such a subfamily would correspond broadly to the tribe Pentilini *sensu* Aurivillius. But this author, taking the presence of a precostal vein in the hind wing as the sole criterion, included in his tribe the genera *Cooksonia* Druce and *Durbania* Trimen, two genera which do not show in their male genitalia any of the distinctive characters enumerated above. A precostal vein being also found in *Megalopalpus*, a genus evidently far removed from the Pentilinae, I cannot accept its presence as a character of basic importance.

In another group of genera it is the tergal elements that have undergone important modifications : the tegumen is radically reduced ; the uncus is composed of two large hemispherical lobes, clearly asymmetrical, fused directly to the vinculum and each armed at the apex with a long, curved, sharp-pointed process ; the valves are elongate, simple in outline and apically slightly falcate ; the penis is strongly curved and ends in a sharp point, its base closely wrapped in a kind of sheath borne on a pedicel attached to the base of the valves. This type of genitalia is very constant in the group, especially as regards the shape and asymmetry of the uncus, the valves differing only slightly from one species to another. I propose to erect for these two genera, *Mimacraea* and *Mimeresia*, the subfamily Mimacraeinae, (**subfam. n.**) although they differ in venational detail and, more particularly, in size and wing markings. *Mimacraea* more or less resembles *Bematistes* ; *Mimeresia* resembles *Pseuderesia* with which it has long been confused.

Let us now consider the genera included by Aurivillius in his tribe Liptenini. We have taken out of this tribe *Euliphyra*, and *Aslauga* and *Paraslauga*, which we have put into the Liphyrinae, and *Mimacraea*, which we have put into the Mimacraeinae. On the other hand we have added *Cooksonia* and *Durbania*, withdrawn from the Pentilinae, in spite of the presence of a small precostal vein in the hind wing, because their very ordinary male genitalia in no way resemble those of the highly specialized Pentilinae. On comparing the male genitalia of the species of those genera of the Liptenini which I have examined, I found such a great variety of structure that I was able to find only one character common to them all, namely that the base of the penis is wrapped in a sheath borne on a more or less distinct pedicel attached to the base of the valves, an arrangement similar to that found in the Mimacraeinae. No doubt, there are other characters common to most of the genera, but no other common to

them all. The distribution of some of these, amongst the genera of the Lipteninae, are indicated below :—

(1) Uncus crescentic, more or less excised along its posterior margin, surrounding a subtriangular tegumen, to which it is connected by a weakly sclerotized membrane which is translucent under the microscope : *Cooksonia*, *Durbania*, *Euthecta*, *Larinopoda*, *Liptena*, *Micropentila* (in part), *Argyrocheila*, *Teratoneura*, *Iridana*, *Deloneura*, *Poultonia*, *Epitolina*, *Batelusia*, *Powellana*, *Neaveia*, *Phytala*, *Stempfferia*, *Epitola*, *Aethiopana*, *Neoepitola* and *Hewitsonia*, but an uncus of this type is not found in *Pseuderesia* (s. str.), *Citrinophila*, *Teriomima*, *Baliochila*, *Cnodontes*, *Eresinopsides*, *Eresina*, *Toxochitona* and *Pseudoneaveia*, or at least not in all the species included in these genera.

(2) Vinculum prolonged to form a more or less well developed saccus, which extends caudad, not cephalad as is the case in most Lycaenidae. The saccus in this case is not an integral part of the vinculum, but is fused to it and is fairly easily detached in the course of dissection ; it is large and triangular in *Cooksonia*, *Durbania*, *Argyrocheila*, *Deloneura* and *Poultonia* ; more elongate in *Liptena*, *Micropentila*, *Batelusia*, *Powellana*, *Neaveia*, *Stempfferia*, *Phytala*, *Epitola*, *Aethiopana* and *Hewitsonia* ; sometimes disproportionate and with a spatulate apex, e.g. in some species of *Liptena* and *Micropentila* ; or even absent in some genera, e.g. *Citrinophila*, *Baliochila* etc.

(3) The penis varies very much in shape ; its external portion is gradually tapered in *Cooksonia*, *Durbania*, some *Liptena*, some *Micropentila*, *Teratoneura*, *Iridana* and *Epitolina* ; bifid in *Larinopoda* ; strongly S-shaped in *Falcuna*, *Argyrocheila*, some *Citrinophila* and some *Eresina* ; provided with large dorsal expansions in *Deloneura*, *Poultonia*, *Batelusia* and some species of *Epitola* and *Hewitsonia* ; disproportionately long, slender, and curved in *Toxochitona* ; its apical part circinate in several species of *Micropentila*.

(4) Finally there is the remarkable structure in *Baliochila* and *Eresinopsoides bichroma* Strand, that deserves mention. This consists of two processes with weakly sclerotized bases which are fused to the tegumen, and to the dorsal side of the penis, and bear either apical hooks or many stiff erect bristles along the whole of their length.

I have not succeeded in dividing the Liptenini (*sensu* Aurivillius) into homogeneous subfamilies, each having a distinctive type of male genitalia. On the other hand, in the present state of our knowledge, with the male genitalia of many species still not examined, the erection of a large number of subfamilies as an alternative solution, seems undesirable. I think that here we are dealing with many different lines of descent, some of which are very ancient and, in the course of a long evolution, have undergone a complete modification of their original external appearance. What can have been the factors which caused some of these species to resemble, in wing colour and markings, *Eurema* or other *Pieridae* ? This is not the place to start a discussion on the causes and evolution of mimicry, but to note its existence. In the course of evolution there may have been convergent lines of development, which tended towards not only similarity of external appearances but even similarity of venation,

for, after all, the number of possible combinations of the veins is limited. Some of these fortuitous groups of species have up to now been treated as true genera, e.g. *Teriomina*, (*sensu* Aurivillius) *Citrinophila* and *Eresina*, but their male genitalia have retained, at least in part, their ancestral characters and their study reveals both the different origins of the species comprising the group, and the artificiality of these so-called genera. One may hope that when all the species of the Liptenini have been methodically examined, it may be possible to trace their phylogenetic relationships, and to group them in a natural classification. For the present however, I prefer to admit defeat rather than yield to a love of symmetry by forming arbitrary groups, whose systematic value would be no improvement on the present classification. Hence I propose to retain provisionally the division of the subfamily into two sections as done by Aurivillius, based on the relative positions of the origins of veins 6 and 7 of the fore wing, i.e. stalked or very close together, in the first group, far apart in the second group.

#### Section 1.

Fore wing veins 6 and 7 stalked or very close together at point of origin.

*Durbania* Trimen. Fore wing 12 veins, vein 6 and the stem of veins 7+8+9 have separate origins; 11 arising nearer to 10 than to the base; hind wing short precostal vein present; 7 not stalked on 6; costa strongly convex at its base; 3 and 4 far apart.

*Durbaniella* van Son. Fore wing with vein 11 arising equidistant between 10 and base; hind wing with short precostal vein, cell about half as long as wing.

*Durbaniopsis* van Son. Fore wing with vein 11 arising much nearer to vein 10 than to base; hind wing with short precostal vein, cell much shorter than in *Durbaniella*, about one-third as long as wing.

*Pseuderesia* Butler. Fore wing (*P. eleaza*) with 12 veins, vein 6 stalked on 7+8+9, 10 from the upper angle of cell in ♂, stalked on 7+8+9 in ♀; or (*P. isca* group) 10 from upper angle of cell; hind wing with 7 stalked on 6, 5 nearer to 6 than to 4, 3 and 4 far apart at origin.

*Citrinophila* Kirby. Fore wing with 12 veins; 6 and 7+8+9 have a common stem; 5 nearer to 6 than to 4; hind wing, 7 branched on 6, 5 nearer to 6 than 4; 3 and 4 far apart.

*Teriomima* Kirby, *Baliochila* Stempffer & Bennett, *Cnodontes* Stempffer & Bennett, *Euthecta* Bennett. Fore wing with 12 veins; 6 and 7+8+9 have a common stem; 5 nearer to 6 than to 4; hind wing, 7 free; 5 nearer to 6 than to 4; 3 and 4 rather close together.

*Larinopoda* Butler. Fore wing with 12 veins; 6 separated from 7+8+9; cell produced at the lower angle; hind wing, 7 free; cell short produced at the lower angle; 3 and 4 far apart; 5 nearer to 6 than to 4.

*Liptena* Hewitson, *Falcuna* Stempffer & Bennett. Fore wing with 12 veins; 6 separated from 7+8+9; cell rather short, 5 nearer to 6 than to 4; hind wing, 7 free; 3 and 4 slightly separated, connate, or slightly stalked.

- Micropentila* Aurivillius. Venation as on *Liptena* ; differs from *Liptena* only in shape of palpi and antennae.
- Eresinopsides* Strand. Fore wing with 11 veins ; 6 and 7+9 have a common stem ; hind wing, 7 stalked on 6 ; 3 and 4 connate.
- Eresina* Aurivillius. Fore wing with 11 veins ; 7+8 and 10 stalked on 6 ; hind wing 7 stalked on 6 ; 3 and 4 have separate origins.
- Toxochitona* Stempffer. Fore wing with 11 veins, 7+8 stalked on 6 ; 10 from upper angle of cell. Hind wing with 7 stalked on 6 ; 6 and 7 widely separate.
- Argyrocheila* Staudinger. Fore wing with 12 veins ; 6 stalked on 7+8+9 ; outer margin deeply scalloped (in *undifera*) ; hind wing, 7 stalked on 6 ; 3 and 4 far apart.
- Teratoneura* Dudgeon. Fore wing with 12 veins ; 6 and stalk of 7+8+9 separate ; 2 and 3 curved towards the inner margin ; outer margin excised ; hind wing, 7 free ; 3 and 4 shortly stalked ; costa concave.
- Iridana* Aurivillius. Fore wing with 11 veins ; 6 and 7 arise from the upper angle of the cell ; 7 doubly curved near the apex ; hind wing, 7 free ; 3 and 4 connate.

Section 2.

Fore wing veins 6 and 7 widely separated at origin

- Cooksonia* Druce. Fore wing with 12 veins ; 6 widely separated from 7+8+9 ; 5 much nearer to 6 than to 4 ; hind wing, short precostal vein present ; 7 free ; 3 and 4 separate.
- Deloneura* Trimen. Fore wing with 12 veins ; 6 widely separated from 7+8+9 ; 5 and 6 arise from the upper angle of the cell ; hind wing, cell short, truncate ; 7 free ; 3 and 4 slightly separate at their origins.
- Poulltonia* Neave. Fore wing with 12 veins ; 6 widely separated from 7+8+9 ; 5 very close to 6 ; hind wing, 7 free ; 5 a little nearer to 6 than to 4 ; 3 and 4 connate.
- Batelusia* Druce. Fore wing with 11 veins ; 6 widely separated from 7+8 ; 5 very close to 6 ; hind wing, 7 free ; 5 nearer to 6 than to 4 ; 3 and 4 connate.
- Tumerepes* Aurivillius. Fore wing with 12 veins ; 6 widely separated from 7+8+9 ; 5 very close to 6 ; hind wing, 7 free ; 5 nearer to 6 than to 4 ; 3 and 4 on a short common stem.
- Neaveia* Druce. Fore wing with 12 veins ; 6 separate from 7+8+9 ; 5 nearer to 6 than to 4 ; hind wing, 7 free ; 5 nearer to 6 than to 5 ; 3 and 4 separate.
- Pseudoneaveia* Stempffer. Venation as in *Neaveia*. Genitalia very different.
- Epitolina* Aurivillius. Fore wing with 12 veins ; 6 and 7+8+9 separate ; hind wing, 7 free, 3 and 4 connate.
- Stempfferia* Jackson. Fore wing with 12 veins ; 6 and 7+8+9 separate ; 5 nearer to 6 than to 4 ; 10 (in the male) shortly stalked on 7, 11 and 7 connate ; 10 (in the female) connate with 7, and 11 slightly before 7 ; hind wing with 7 free, 3 and 4 short stalked.
- Phytala* Westwood. Fore wing with 12 veins ; 6 widely separated from 7+8+9 :

5 nearer to 6 than to 4 ; 11 and 12 confluent ; hind wing, 7 free, 3 and 4 on a short common stem.

*Epitola* Westwood. Fore wing with 12 veins ; 6 separate from 7+8+9 ; 5 nearer to 6 than to 4 ; 11 and 12 free ; hind wing, 7 free ; 3 and 4 shortly stalked.

*Aethiopana* Bethune Baker. Fore wing with 12 veins ; 6 widely separated from 7+8+9+10 ; 11 and 12 free ; hind wing, 7 free ; 3 and 4 on a common stem.

*Neoepitola* Jackson. Fore wing with 12 veins ; 6 widely separated from 7+8+9 ; 11 stalked on 10 ; hind wing with 7 free, 3 and 4 on a common short stem.

*Hewitsonia* Kirby. Fore wing with 12 veins ; 6 and 7+8+9 separate ; 5 nearer to 6 than to 4 ; hind wing, 7 free ; 3 and 4 on a common stem.

*Powellana* Bethune Baker. Fore wing with 12 veins ; 6 widely separated from 7+8+9 ; 5 nearer to 6 than to 4 ; 11 stalked on 10 ; hind wing 7 free ; 3 and 4 connate.

I propose to restrict the name Lipteninae to Section 1, and to adopt the name Epitolinae, a name already employed by several authors, for Section 2, which is much more homogeneous than Section 1, from the point of view of the male genitalia. In Section 2 (except in *Pseudoneaveia*) the uncus is crescentic, sometimes notched at the apex, the subunci are robust, curved, except in *Epitola hewitsoni* which lacks them completely, the valves have a smooth uniform outline, are elongate with convex upper edge, a nearly straight lower edge and a rounded apex. The penis bears a wide expansion on its dorsal surface in *Deloneura*, *Poultonia* and *Batelusia*, and also in some species of *Epitola* and *Phytala*.

In the Lycaeninae (*sensu* Aurivillius) we start with the genus *Megalopalpus* Rober, all the characters of which, specialized male genitalia, large palpi and venation, show its close relationship to the Indo-Malayan *Gerydus* and *Allotinus*. Its proper place is therefore in the subfamily Miletinae (= Gerydinae) as Aurivillius and Bethune Baker had already pointed out.

We now come to the extensive subfamily Theclinae, which is cosmopolitan and forms the bulk of the rich neotropical Lycaenid fauna. I propose to include in it the following genera ; *Deudorix* Hewitson, *Hypomyrina* Druce, *Actis* Karsch, *Kopelates* H. H. Druce, *Hypokopelates* H. H. Druce, *Pilodeudorix* H. H. Druce, *Diopetes* Karsch, *Virachola* Moore, *Myrina* Fabricius, *Oxylides* Hübner, *Syrmoptera* Karsch, *Hypolycaena* Felder, *Hemiolaus* Aurivillius, *Stugeta* H. H. Druce, *Pseudiolaus* Riley, *Trichiolaus* Aurivillius, *Dapidodigma* Karsch, *Tanuethaira* H. H. Druce, *Argiolaus* H. H. Druce, *Iolaphilus* Stempffer & Bennett, *Philiolaus* Stempffer & Bennett, *Iolaus* Hübner, *Aphniolaus* H. H. Druce, *Epamera* H. H. Druce, *Etesiolaus* Stempffer & Bennett, *Sukidion* H. H. Druce, *Leptomyrina* Butler, and *Capys* Hübner.

Except in a few instances, with which I shall deal later on, the male genitalia of the above genera have the following characters : tegumen large, hood-shaped with a more or less deep rounded median depression in the posterior margin ; uncus composed of two small lobes fused to the tegumen on either side of this depression, (but it is difficult to make out the suture by a superficial examination, so the lobes may then appear to be mere thickenings of the tegumen less translucent posteriorly). Very seldom the two uncal lobes fuse with one another so that the median depression



disappears, e.g. in some species of *Epamera* ; subunci long, robust, usually curved, sometimes bearing apophyses ; vinculum wide above, rather narrow below, the saccus generally small or absent ; lower fultura absent in many genera (e.g. *Deudorix* and closely allied genera, *Capys*, *Hypolycaena* and *Leptomyrina*), ring-shaped and encircling the penis, sometimes carried on pedicel in some genera of the *Iolaus* groups ; the valves, reduced in size in *Deudorix* and the closely allied genera, *Capys*, *Oxylides*, *Syrmoptera*, *Hypolycaena* and *Leptomyrina*, are more fully developed in the genera of the *Iolaus* group ; penis widely open on the dorsal surface of its internal portion, usually weakly curved, and often enclosing a voluminous cuneus or large spines.

It is remarkable that the male genitalia of the Theclinae are often extremely similar in species which outwardly are very different. This is particularly the case in the *Deudorix* group. The relatively simple pattern of the genitalia of this subfamily suggests that the Theclinae are of recent origin, in spite of their wide geographical distribution.

The species whose male genitalia differ from the typical structure just described belong to the genera and subgenera *Myrina*, *Dapidodigma*, *Argiolaus*, *Philiolaus* and *Etesiolaus*. Having already given detailed accounts of their male genitalia under the relevant genera there is no need to repeat them here. It is only necessary to mention that in all these it is the tergal parts that are modified, the sternal elements remaining typically Thecline.

It is fairly easy to pick out groups of closely allied genera in the Ethiopian Theclinae. The genera *Hypomyrina*, *Actis*, *Kopelates*, *Hypokopelates*, *Pilodeudorix*, *Diopetes* and *Virachola* are scarcely more than subgenera of *Deudorix*, *Capys* is closely allied to them. *Myrina* is rather isolated ; *Syrmoptera* can hardly be separated from *Oxylides* ; *Leptomyrina* is closely allied to *Hypolycaena* ; *Dapidodigma* is isolated, but *Hemiolaus*, *Stugeta*, *Pseudiolaus*, etc. up to and including *Sukidion* can be regarded as belonging to this large *Iolaus* group.

Continuing the examination of the genera in the order adopted by Aurivillius, I propose to unite in the subfamily Aphnaeinae Swinhoe (1911, *Lep. Indica* 9 : 156) the following genera :—*Aphnaeus* Hübner, *Paraphnaeus* Thierry Mieg, *Apharitis* Riley, *Spindasis* Wallengren, *Lipaphnaeus* Aurivillius, *Choloroselas* Butler, *Zeritis* Aurivillius, *Desmolycaena* Trimen, *Axiocerses* Hübner, *Phasis* Hübner, *Aloeides* Hübner, *Poecilmitis* Butler, *Chrysoritis* Butler, *Crudaria* Wallengren, *Erikssonina* Trimen and *Pseudaetis* Druce.

The adoption of this grouping is justified on the basis of one striking character in the structure of the male genitalia, which is present in all the species I have examined, namely the semimembranous band connecting the median parts of the upper processes of the valves by passing and closely sheathing the penis. There is a trace of this structure in some species of *Actis* and *Kopelates*, in which the valves are also connected in their middle, but in these two genera, closely allied to *Deudorix*, it is less well developed and the lower fultura is absent, whereas the latter is always present in the Aphnaeinae, usually in the shape of a notched shield.

In *Aphnaeus* and *Paraphnaeus* the dorsal elements are subrectangular and hood-

shaped, the subunci long, robust, and curved, the two processes of the valves are separated at their apices, and the penis is very massive, and bears spines and numerous cornuti. In *Apharitis* and in most species of *Spindasis* the dorsal elements are divided into two lobes by a deep median depression in the posterior margin of the tegumen and the valves are not apically divided. In *Lipaphnaeus*, *Chloroselas* and *Desmolycaena* the dorsal structure form an oval, which is excised at the hind apex, the subunci long and slender (except in *D. rogersi* Riley in which the subrectangular shape reappears and the subunci are absent). In *Zeritis* the dorsal aspect is subtriangular, the anterior margin of the tegumen bears a rounded process, the subunci have a long apophysis and the lower fultura is composed of two long asymmetrical arms. In *Axiocerses* the dorsal aspect rather resembles that of *Zeritis* but the arms of the lower fultura are symmetrical. In *Phasis*, *Aloeides*, *Poecilmitis* and *Chrysoiritis* the dorsal elements are more or less rectangular and always bear a rounded process on the anterior margin. The subunci are always long, and robust and bear a small apophysis. In *Crudaria* on the other hand the subunci are reduced in size. In *Erikssonina* the dorsal aspect resembles that of *Axiocerses*, but the subunci have no apophysis. I do not know *Pseudaletis* well, having examined only six species, in all of which the uncus is divided into four processes (in *P. agrippina* Druce the apex of each process is blunt, in *P. clymneus* Druce the apices are pointed) and lacks subunci. But the lower fultura, valves and penis are of Aphnaeine type, for which reason I include *Pseudaletis* in this subfamily, though with some misgiving. Except for *Pseudaletis*, all the genera of this subfamily have moreover one striking external character, namely the presence of metallic silvery golden or nacreous bands and spots on the underside of the wings. The palaearctic genus *Cigaritis* Boisduval, a close ally of *Apharitis*, should be included in this subfamily.

We must now consider the genus *Spalgis* Moore, the precise affinities of which I find difficult to decide. In his generic description, Moore says that it is allied to *Gerydus* (Seitz, 1923, *Gross-Schmett. Erde* 9 : 881). Fruhstorfer compares the wing markings of *Spalgis* with those of *Lycaenopsis* and their dull colour with that of the *Gerydinae*; as regards the male genitalia he says that the long furca resembles that of *Tarucus*, and that the uncus resembles that of *Everes*. He concludes that *Spalgis* is probably a very ancient group, possibly the stock from which both *Gerydus* and *Everes* were derived.

Colour and wing pattern are not very important characters in my opinion. The palpi of *Spalgis* have no resemblance whatever to those of *Gerydus*, the short stout antennae are unlike those of *Gerydus*, *Everes* or *Lycaenopsis*, and the genitalia in no way resemble those of *Lycaenopsis* or *Gerydus*. On the other hand the pentagonal uncus and short stout subunci are very much Everine in type. I conclude that, on the evidence available, the wisest course is to leave the genus *Spalgis* isolated in the subfamily Spalginae, as other authors have done.

The next group comprises the genera *Cupidesthes* Aurivillius, *Anthene* Doubleday, *Neurypexina* Bethune Baker, *Neurellipes* Bethune Baker and *Triclema* Karsch, which differ only in minor venational characters. Their male genitalia are so uniform in type that I think they ought to be considered merely as subgenera of

*Anthene*. The genitalia may be described as follows : Uncus composed of two small lobes fused to the tegumen on either side of the median depression in its posterior margin, subunci curved, sometimes robust, sometimes slender ; tegumen a rather narrow notched band ; vinculum always prolonged towards sternite 8 to form a saccus which is often well developed ; lower fultura a furca with divergent arms and attached to the base of the valves, which are oval and more or less incised ; penis elongate and widely open on the dorsal surface of its internal portion.

In external appearance the *Anthene* group bear some affinity to the Theclinae, but the male genitalia are intermediate between those of the Theclinae and the Lampidinae. However, the invariable presence of a furca and the poor development of the tegumen lead me to place the group in the Lampidinae, where they form a well marked tribe.

I would also include in the Lampidinae the following genera taken from the "omnibus" genus *Cupido* of Aurivillius :—*Phlyaria* Karsch, *Uranothauma* Butler, *Cacyreus* Butler, *Tarucus* Moore, *Castalius* Hübner, *Lampides* Hübner, *Syntarucus* Butler, *Cyclyrius* Butler, *Harpendyreus* Heron, *Pseudonacaduba* Stempffer, *Lepidochrysopts* Hedicke, *Euchrysopts* Butler, *Eicochrysopts* Bethune Baker, *Cupidopsis* Karsch, *Thermoniphias* Karsch, *Oboronia* Karsch, *Athysanota* Karsch and *Actizera* Chapman. I must confess that it is not without some hesitation that I group together all these genera because the male genitalia are not of a perfectly uniform type. For instance, the male genitalia of *Tarucus*, *Castalius* and *Eicochrysopts* differ in some particulars from the common plan, which may be summarized as follows :—Tegumen with a median depression in its posterior margin, sometimes reduced to a narrow band ; uncus divided into two lobes ; well developed subunci, lower fultura furca-shaped, and sometimes with an anellus ; penis subcylindrical. Some pairs of genera, e.g. *Phlyaria* and *Uranothauma*, *Syntarucus* and *Cyclyrius* have a similar specialized penis, and in this show close relationship to the American *Leptotes* ; others, e.g. *Lepidochrysopts*, *Euchrysopts*, *Thermoniphias*, *Oboronia* and *Athysanota* from a group characterized by their reduced tegumen, their digitate valves and the presence of an anellus.

As regards *Tarucus* with *tectorius* and *virgae excitatae* present in most species, *Castalius* which is only an artificial grouping of species with convergent external appearance, and *Eicochrysopts* with its four-lobed dorsum, all three genera differ considerably from the typical Lampidinae and if I have included them in this subfamily it is solely because I could not find a more suitable place and they seemed more allied to the Lampidinae than to any other subfamily. To *Actizera*, which has some of the characteristics of the Glaucopsychinae, I give only a temporary home in the Lampidinae. It seems probable that in the future this subfamily will need subdivision into several homogeneous groups, but before that can be done a more thorough study of the Indo-Australian species on the basis of their male genitalia is needed.

There is no doubt that *Chilades* Moore and *Freyeria* Courvoissier should be included in the subfamily Plebeinae, a subfamily not well represented in the Ethiopian and Indo-Malayan faunas but which includes many holarctic species.

*Azanus* Moore is characterized by its undivided uncus, which is more or less excised at its apex, its short robust subunci and its reduced tegumen, features typical of the sub-family Everinae, which it also resembles in venation viz. fore wing with 11 veins, with 11 and 12 confluent.

Although the genera *Brephidium* Scudder and *Oraidium* Bethune Baker include very few species I think they should be placed in a subfamily to themselves, the *Brephidinae*. Their male genitalia are of such a peculiar structure and differ so markedly from those of all other genera of Lycaenidae that they cannot be included in any of the other subfamilies.

I propose to restrict the subfamily Zizeerinae to the two genera *Zizeeria* Chapman and *Zizina* Chapman. It is characterized by an uncus divided into two slender lobes, slender curving subunci long slender curved valves with long stiff bristles, and a flask-shaped penis, with pointed apex and a vesica bearing numerous spines. Chapman included in the subfamily Zizeeriinae the genera *Actizera* Chapman and *Zizula* Chapman. I have above (p. 275) stated my reasons for taking *Actizera* out of the subfamily Zizeeriinae. As for *Zizula* their male genitalia have one feature found in the Zizeeriinae, namely the stiff valvular bristles, but they have also one feature in common with the Brephidiinae, namely a penis shaped like a bird's beak. The Zizeeriinae are found in the Indo-Malayan, Ethiopian and Palaearctic zones, the Brephidiinae in the Ethiopian, neotropical and Sonoran zones, the species of *Zizula* in Indo-Malayan, Ethiopian and neotropical zones. There is probably some relationship between these archaic groups which probably originated before the breaking up of Gondwanaland.

There remains only the genus *Lycaena* Fabricius, which has very few species in the Ethiopian fauna, but is well represented in the holarctic zone. It comprises the "Coppers" so familiar to British entomologists and must be included in a separate subfamily. As to the name to be given to this subfamily, I hesitate between Lycaeninae and Heodinae; although the former is the correct name in accordance with the Rules of Nomenclature, there is a risk that it might be confused with Lycaeninae, *sensu* Aurivillius, by those entomologists who are not specialists.

It is not difficult to foresee that criticisms will be levelled at my conclusions, indeed I am well aware of some that can be made. It is abundantly clear that most of the proposed subfamilies, namely the Liphyrinae, Thestorinae, Pentilinae, Mimacraeinae, Miletinae, Aphnaeinae, Plebeiinae, Everinae, Brephidinae, Zizeerinae and Lycaeninae are based on well defined structural characters. To distinguish the Lipteninae from the Epitolinae or the Lampidinae from the Theclinae is much more difficult. Why, one might ask, split up the African Lycaenid fauna into so many fragments when eight subfamilies suffer for the whole of the palaearctic fauna? Why erect a subfamily to include only two genera each with only a few species? Why propose a modification of the generally accepted sequence of genera when, on my own admission, the reasons for this are debatable.

The answer is that the African fauna, at any rate as far as the Lycaenidae are concerned, is far richer and much more varied than that of the palaearctic region. During the Tertiary period, Europe was subjected to so many large scale changes of

climate that its original fauna must have been replaced, at least partially on several occasions, the species present there now having been derived mostly from recent angarian immigrants. In Africa, on the other hand where the climate remained more stable, there are still ancient gondwanian elements which have continued to evolve there, or have come in from Indo-Australian regions via Arabia. It is this that has produced the astonishing diversity both of types and of highly specialized genera. Some of these archaic groups include only a small number of species that have, however, an exceedingly wide distribution, they are nevertheless very distinct, and it would be quite arbitrary to lump them, systematically, with a group of more recent and more numerous species. Classification can only take facts into account, it cannot be subservient to geometrical patterns. It cannot, for example, like an army commander divide its taxa into units of fixed size, like regiments, battalions and companies.

I could have limited the scope of this work to a bare compilation and the statement of facts. Instead, I have attempted to revise and bring up to date the systematics of the African Lycaenidae by the use of characters accepted in the study of the faunas of other regions. This first attempt on these lines cannot but be imperfect and, to some extent, hypothetical. I have not glossed over my doubts, hesitations and setbacks, but have called attention to them, believing it wiser so to do than to attempt a dogmatic solution in spite of them. The preparation of this work has occupied much of my time and has entailed much labour, I am fully satisfied if it attracts fruitful criticism and provides basis for a more comprehensive and detailed investigation.

A POSTSCRIPT

Mr. Harry K. Clench, of the Carnegie Museum, Pittsburgh, U.S.A. has been so very kind as to send me a copy of the volume on the Butterflies of Liberia, (1965, *Mem. Am. ent. Soc.* **19**), to which he contributed the section on the Lycaenidae. It is most unfortunate that this should have been published at a moment when it was no longer possible for me to incorporate the important results of his research in the body of the present work. This has obliged me to review, in the form of a supplementary note, his ideas on the subject of the classification of the African Lycaenidae. And I find it a little disconcerting to have to disagree, on several matters of importance, with the views of a valued correspondent of long standing.

As a starting point Clench erects the superfamily Lycaenoidea, divided into four families : Liptenidae, Liphyridae, Lycaenidae and Riodinidae. I will not deal with the last of these as it is outside the scope of the present work.

If the Liphyridae are excluded from the Lycaenidae because of the segmented fore tarsi of the males of the former, it would be equally logical to exclude the Thestorinae from the Lycaenidae, because they too have segmented fore tarsi, a character which I regard as of primary importance.

Clench then subdivides each of the families on the basis of a variety of characters, without according consistent primacy to any single character. For example, he

uses turn and turn about the morphology of the fore tarsi of the male, the presence of a precostal vein on the hind wing, the arrangement of the small spines on the underside of the male fore tarsi, the relative lengths of the femur and tibia of the hind leg, the wing venation in general, the presence or absence of coremata, and even at times the food of the larvae. On the other hand he seems to attribute only a secondary degree of importance to the form of the male genitalia.

I find myself unable to agree with this method, for I believe it essential, in order to achieve a coherent system, to establish a kind of hierarchy—arbitrary perhaps, amongst characters, and to follow this throughout a family, only using characters of secondary importance in a supplementary sense. To me it does not seem reasonable, for example, to attach the same taxonomic importance to the spines on the fore leg as to the genitalia of the male.

However, so as not unduly to prolong this note, I propose to indicate below only those points upon which I do not find myself in agreement with Clench.

Page 269 :—Key to the subfamilies of the Liptenidae :

- |   |   |                                   |
|---|---|-----------------------------------|
| 1 | Humeral (precostal) vein present on hind wing . . . . .   | 2                                 |
|   | Humeral vein absent . . . . .   | 3                                 |
| 2 | Ventral spines of fused male fore tarsus apically in two similar rows, the number, angle of insertion and spacing of the spines about the same in each row ; hind leg with femur shorter than tibia . . . . .   | <b>Pentilinae</b>                 |
| – | Ventral spines of fused male fore tarsus in two dissimilar rows, a mesad row of erect, rather closely and evenly spaced spines and an exterior row of sparse, declivent, irregular spaced spines, hind leg with femur subequal to or slightly exceeding tibia . . . . . | <b>Durbaninae</b> (extralimital)  |
| 3 | Male fore tarsus fused to a single segment, with two dissimilar rows of spines (about as in Durbaninae above) ; hind leg with femur shorter than tibia . . . . .  | <b>Lipteninae</b>                 |
|   | Male fore tarsus fully formed, similar to that of the female ; hind leg with femur longer than tibia . . . . .  | <b>Thestorinae</b> (extralimital) |

I have already explained (p. 268) my reasons for excluding *Durbania*, and the allied recently erected genera, from the Pentilinae, because their genital armatures are simple and symmetric. As to the genus *Thestor* (which Clench does not mention again, since it is restricted to South Africa), I consider it has nothing to do with the Lipteninae, the fore tarsi of the male being segmented.

Page 269 :—Subfamily Pentilinae.

I see no objection to the generic treatment adopted by Clench. Indeed I fully support his creation of the genus *Ptelina* for *carnuta* Hewitson, having already indicated, following Bethune Baker, that this species should be eliminated from the genus *Telipna*. I would point out, however, that the male genitalia of *carnuta* are clearly analogous to those of *Alaena*, particularly in respect of its dorsal elements and the presence of subunci.

Page 281 :—Key to the Tribes of Lipteninae.

- |   |  |                  |
|---|--|------------------|
| 1 | Fore wing $R_{3-5}$ arises distinctly before upper angle of cell, well separated from origin of M ; male with coremata eversible ventral sacs bearing long, modified scales, the sacs just anterior to genital capsule . . . . . | <b>Epitolini</b> |
|---|--|------------------|

	R <sub>3-5</sub> arise from upper angle of cell, close to or connate with (occasionally long stalked with M <sub>1</sub> )	2
2	Male with coremata (as above)	<b>Iridanini</b>
	No coremata	<b>Liptenini</b>

The presence of coremata in many species has been well known to me for many years. I make no mention of them in the present work for the following reasons :—

- (1) Within a single genus there may be some species with coremata, others without.
- (2) In the course of dissection in water, after maceration in potash, it often happens that, on applying pressure to the abdomen to force the extrusion of the genitalia, the coremata remain within the eighth segment, and escape detection through being mixed up with other abdominal debris. This depends I believe, in some degree upon the degree of decomposition sustained by the organs after death, in a hot and humid climate, and also perhaps upon the strength of the potash solution used.
- (3) In the process of mounting in Canada balsam, when pressure is put upon the cover slip, the coremata often break away from the vinculum and the scales are dispersed throughout the preparation and become almost invisible ; for this reason I have hitherto not included the coremata in my preparations.

These technical details may seem trivial, and out of place. Forty years experience, however, has taught me that they are of importance. It is only too easy to draw false conclusions from a faulty mount.

Wishing to check the taxonomic importance of the coremata, in the sense in which Clench uses them, I have made a small series of fresh preparations of species already examined, paying particular attention to preserving the coremata, with the following results.

*Coremata present*

*Coremata absent*

*Lipteninae*

- Liptena o-rubrum* Holland
- Liptena modesta* Kirby
- Liptena despecta* Holland
- Liptena catalina* Smith & Kirby
- Micropentila brunnea* Kirby
- Micropentila dorothea* Bethune Baker
- Micropentila ugandae* Hawker Smith
- Micropentila bunyoro* Stempffer & Bennett
- Micropentila mpigi* Stempffer & Bennett
- Micropentila jacksoni* Talbot
- Micropentila cherereti* Stempffer & Bennett
- Teratoneura isabellae* Dudgeon
- Iridana unyoro* Stempffer

- Liptena opara immaculata* Grünberg
- Liptena flavicans* Smith & Kirby
- Liptena homeyeri* Dewitz
- Liptena ideoides* Dewitz
- Micropentila adelgitha* Hewitson
- Argyrocheila undifera* Staudinger
- Eresina rougeoti* Stempffer

*Coremata present*

*Phytala elais* Doubleday Hewitson  
*Phytala hyltonides* Aurivillius  
*Stempfferia carcassoni* Jackson  
*Aethiopana honorius* Fabricius  
*Epitola ceraunia* Hewitson  
*Hewitsonia boisduvali* Hewitson

*Coremata absent**Epitolinae*

*Poultonia ochrascens* Neave  
*Powellana cottoni* Bethune Baker  
*Epitolina dispar* Kirby  
*Epitolina catori* Bethune Baker

There is no point in pursuing this matter further. The lists above clearly demonstrate that the presence or absence of coremata does not provide a character of valid generic significance, and even less of tribal value. In order to separate the Lipteninae from the Epitolinae we are forced back on the venational characters of Aurivillius' system. In fact, as I have already indicated, the two subfamilies are not sharply definable, *Iridana* providing a transition from one to the other.

Clench includes the Mimacraeinae within his Liptenini. I must confess that I do not understand why he fails to accord them subfamily rank, for they constitute a perfectly homogeneous, very specialized group in which the male genitalia are so uniform that they are rarely even of use in separating species. I cannot accept *Pseuderesia eleaza* in any way as providing a transition in genitalia characters between *Mimeresia* and the Lipteninae, in *Mimeresia* as in *Mimacraea* the uncus is formed of two very large semicircular asymmetric lobes, each bearing a long tapering similarly asymmetric horn on its terminal margin and the tegumen is much reduced. The genitalia indeed are without any exception asymmetric in every species. On the other hand in *Pseuderesia eleaza*, although admittedly the tegumen is equally reduced, the uncus is formed of two long perfectly symmetrical foliaceous processes, and there are neither semicircular lobes nor accessory horns; I freely admit that in *eleaza* the uncus is more deeply divided and the tegumen narrower than in the other species of *pseuderesia*, in consequence of which it occupies a somewhat isolated position in the genus, but I do not see any necessity to erect, for the other species of *Pseuderesia*, the new genus *Eresiomera* based otherwise on the shape of the fore wing and the pattern of the markings on the hind wings. If the shape of the wings is taken as a generic criterion, *Epitola* should be subdivided into at least three genera according to whether the four wings are falcate (*posthumus*), dentate (*hewitsoni*) or slightly convex (*cercene*). To accept wing pattern as a generic character is to return to the mistakes of earlier authors who put *Azanus isis* in *Castalius* and *Euchysops crawshayi* and most of the species of *Harpendyreus* in *Cyclus*.

In the same way, I see no merit in restricting the genus *Phytala* to its type species *P. elais*, and erecting for all the other species the new genus *Hypophytala*, on the basis of the large size of *elais* and the much smaller expanse of all the other species of *Phytala*, and the presence of a protuberance on the dorsal surface of the penis in *hyettoides*, which is lacking in *elais*. In my view this protuberance is not a good generic character, since it is to be found in many other Epitolinae, for example, *Deloneura millari* Trimen, *Poultonia ochrasceus* Neave, *Batelusia zebra* H. H. Druce, *Epitola posthumus* Fabricius, *Epitola urania* Kirby and others.



Page 320 :—Family Liphyridae.

Clench unites in this family the subfamilies Liphyrinae and Gerydinae and the Indo-Malaysian Poritiinae. The last is not well known to me, but the association of the other two seems debatable, since they differ fundamentally in their morphology. In the Liphyrinae the male fore tarsus is segmented and the genitalia differ little from those of the Lycaenidae. In the Gerydinae the fore tarsi are unsegmented, and in *Gerydus*, *Allotinus* and *Megalopalpus* the hind wing has a precostal vein, and the very specialized genitalia are different from those of the Lycaenidae.

Page 321 :—Subfamily Liphyrinae.

The author divides this subfamily into two tribes, the Liphyrinae and the Lachnocnemini. The former corresponds to my subfamily Liphyrinae ; but the presence here of *Lachnocnema*, which apart from the segmented fore tarsi, bears no resemblance whatever to the Liphyrinae, is a matter of surprise. I consider *Lachnocnema* to be much more closely related to *Thestor*, which Clench exiles to the Liptenidae.

Page 325 :—Subfamily Gerydinae.

Divided into two tribes, Gerydini and Spalgini. Here again I cannot accept this association. The Gerydini (or Miletinae) have a precostal vein on the hind wing and very specialized male genitalia ; *Spalgis* is utterly dissimilar, having no precostal vein and genitalia of a quite common-place Everinae type. Clench draws attention to the fact that in both groups the larvae are carnivorous. I doubt the advisability of using this character, for nothing is known of the larval habits of 80% of the African species. Moreover, such information as is available suggests that this carnivorous habit is not absolutely constant. Some phytophagous species do not disdain honey dew, and the exudates of various Homoptera. Others spend part of their larval life in ant's nests or in shelters constructed by ants. What happens within the ant's nests ? Do the larvae subsist on the regurgitated food of the ants, or do they sometimes devour the ant larvae or pupae ? I do not know. In the course of rearing the common European Black Hairstreak butterfly in captivity, I noticed that this normally phytophagous larva sometimes becomes a ferocious cannibal during the last instar, even when amply provided with its normal food. I fancy this seldom happens in nature, since these slow-moving larvae live widely dispersed. There is here a clear indication of a carnivorous trend in the Lycaenidae ; larvae of other families deprived of their natural food supply die of starvation without recourse to cannibalism.

Page 331 :—Lycaenidae

Page 332 :—Theclinae

Page 357 :—Aphnaeinae

We are in agreement here. No comment is necessary.

Page 364 :—Subfamily Plebeinae

Divided by Clench into Lampidini, Everini, Plebejini and Zizeerini.

In my view, all these tribes merit to rank as equal subfamilies. The Lampidini occur throughout the Ethiopian and Indo-Malaysian regions and even reach the Neotropical region, but very few penetrate into the holarctic zone. It is probably a very ancient subfamily, for the male genitalia exhibit wide variety. When the Lycaenid fauna of the tropics is fully known, I expect it will prove necessary to divide the group into several subfamilies. The Everinae are mainly holarctic and include only a few genera with relatively little differences in their male genitalia. The Plebejinae are certainly a recent subfamily of Angarian origin. They account for the great bulk of the holarctic "Blues", only two genera, *Freyeria* and *Chilades* having penetrated the tropics of the Old World. The male genitalia throughout the Plebejinae are of a very uniform pattern, with the uncus divided into two more or less subtriangular lobes, and curved subunci. The Zizeeriinae are a primitive subfamily with a very wide distribution in spite of the small number of species.

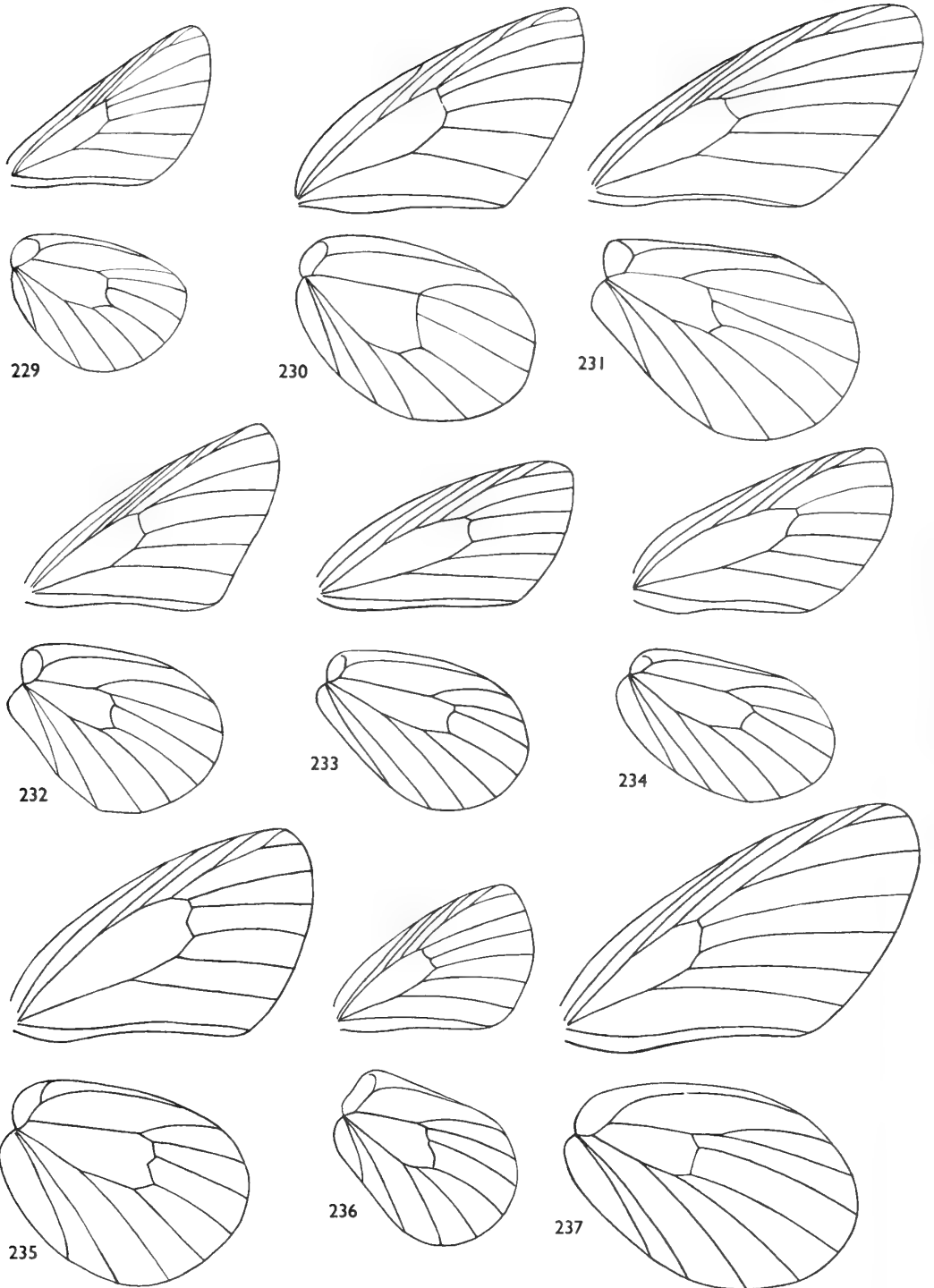
Their male genitalia often exhibit archaic characters. The subfamily Plebejinae as conceived by Clench appears to me to be decidedly heterogeneous.

I will conclude by repeating that I make no claim to a monopoly of the truth, on the contrary, I have been at pains to show how precarious some of my conclusions seem to be, and I am naturally glad to change my opinions in favour of others that would seem better justified. But I should be lacking in scientific honesty if I failed to indicate, however briefly, my reasons for retaining provisionally the system of classification which I first elaborated some twenty years ago.

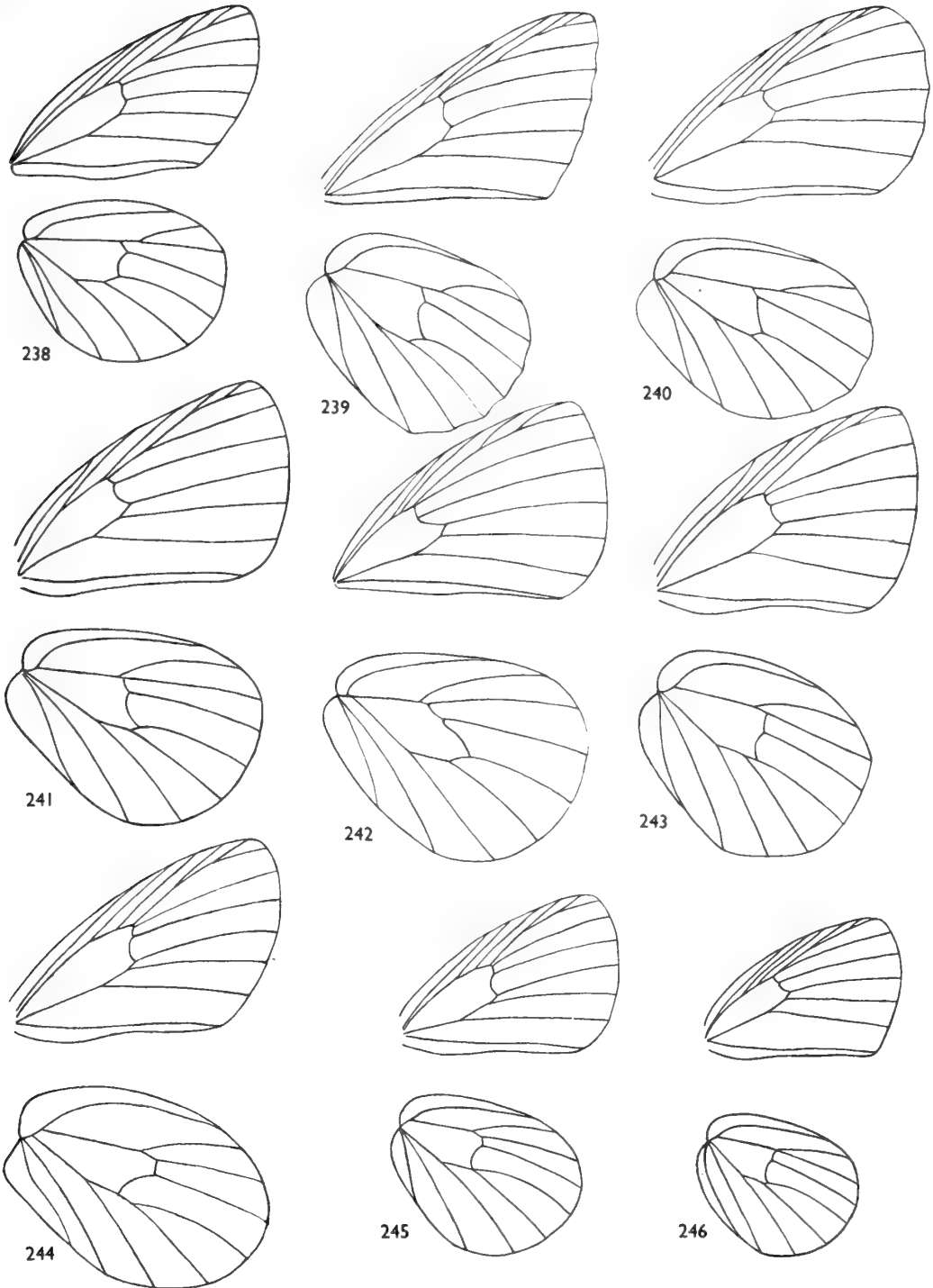
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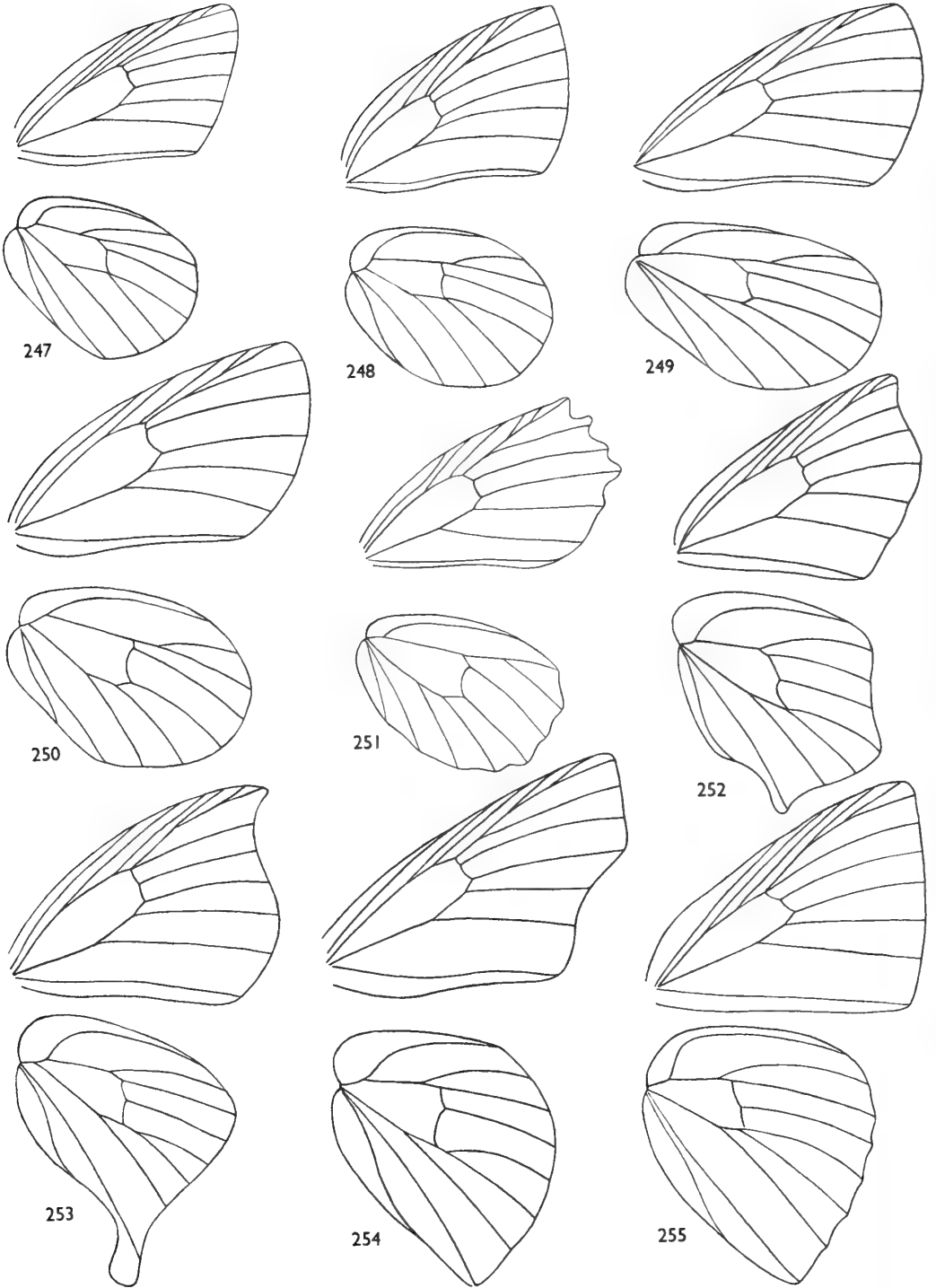
Full references are given in the text only to works not listed above or not covered by references to be found in Aurivillius (1898, 1919-1925).



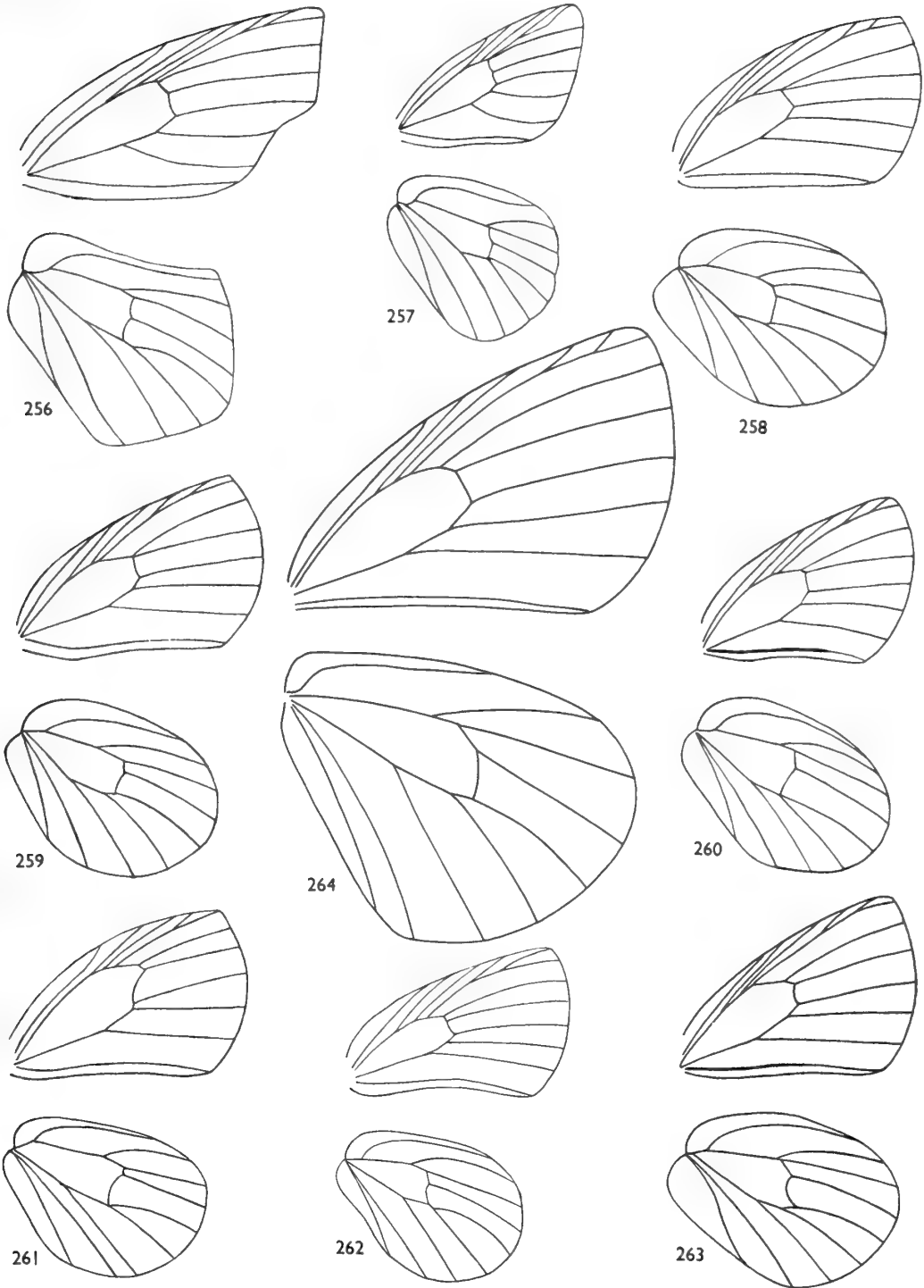
FIGS. 229-237. Wing venation of :—229, *Alaena amazoula* Boisduval ; 230, *Telipna bimacula semirufa* (Smith & Kirby) ; 231, *Cooksonia trimeni* Druce ; 232, *Cooksonia neavei* (Druce) ; 233, *Pentila tropicalis tropicalis* (Boisduval) ; 234, *Liptenara batesi* Bethune Baker ; 235, *Ornipholidotos kirbyi* (Aurivillius) ; 236, *Durbania amakosa* Trimen ; 237, *Mimacraea darwinii* Butler.



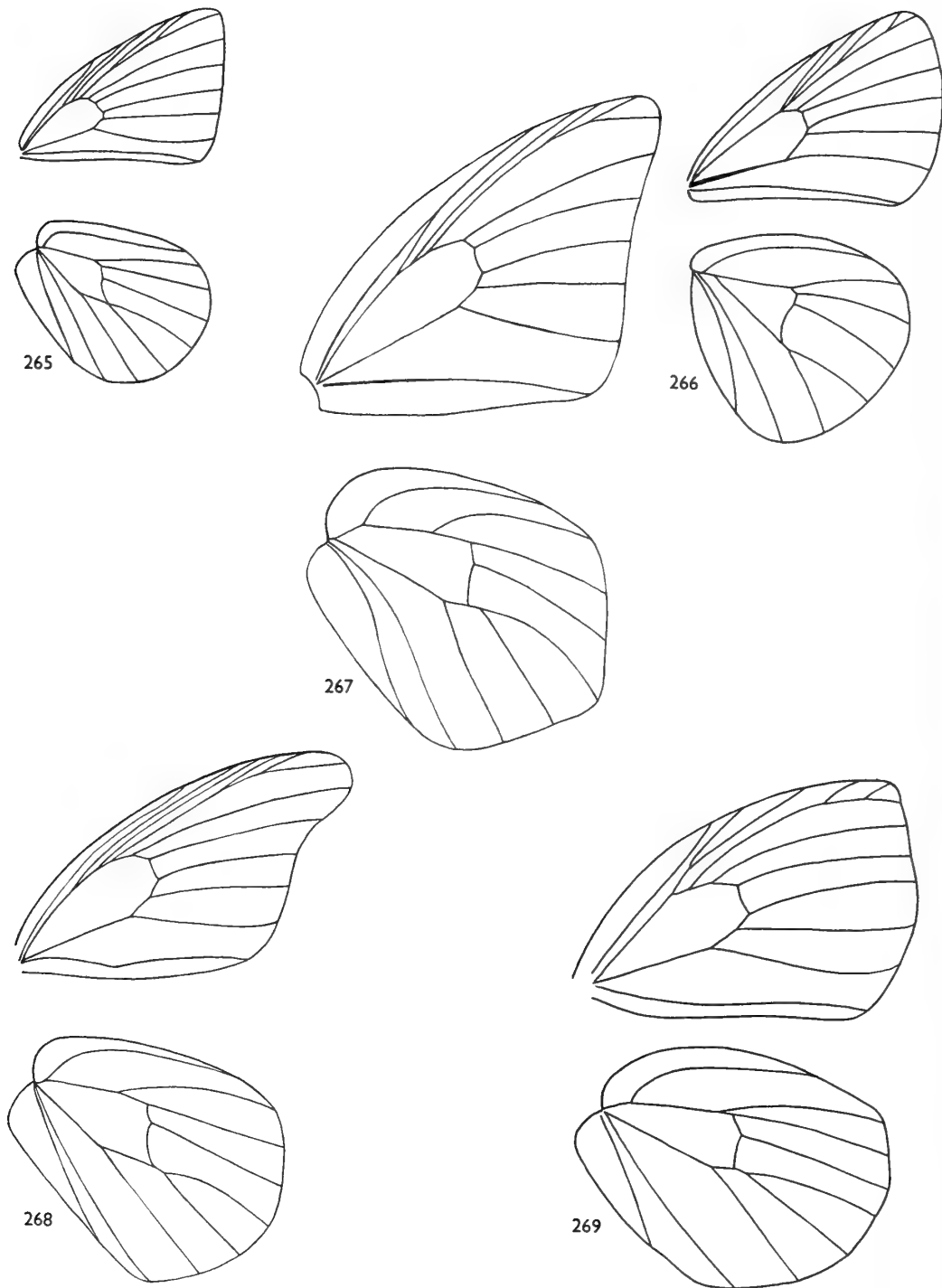
FIGS. 238-246. Wing venation of :—238, *Mimeresia libentina* (Hewitson); 239, *Pseuderesia eleaza eleaza* (Hewitson); 240, *Citrinophila marginalis* Kirby; 241, *Teromima subpunctata* Kirby; 242, *Larinopoda lircaea* (Hewitson); 243, *Falcuna libyssa libyssa* (Hewitson); 244, *Liptena (Liptena) undularis* Hewitson; 245, *Liptena (Liptena) decipiens* (Kirby); 246, *Liptena (Tetrarhanis) ilma daltoni* Poulton.



FIGS. 247-255. Wing venation of:—247, *Micropentila adelgitha* (Hewitson); 248, *Eresinopsides bichroma* Strand; 249, *Eresina corynetes* (Smith & Kirby); 250, *Toxochitona gerda* (Kirby); 251, *Argyrocheila undifera* Staudinger; 252, *Aslauga vininga* (Hewitson); 253, *Paraslauga kallimoides* (Schultze); 254, *Euliphya mirifica* Holland; 255, *Egumbia ernesti* (Karsch).

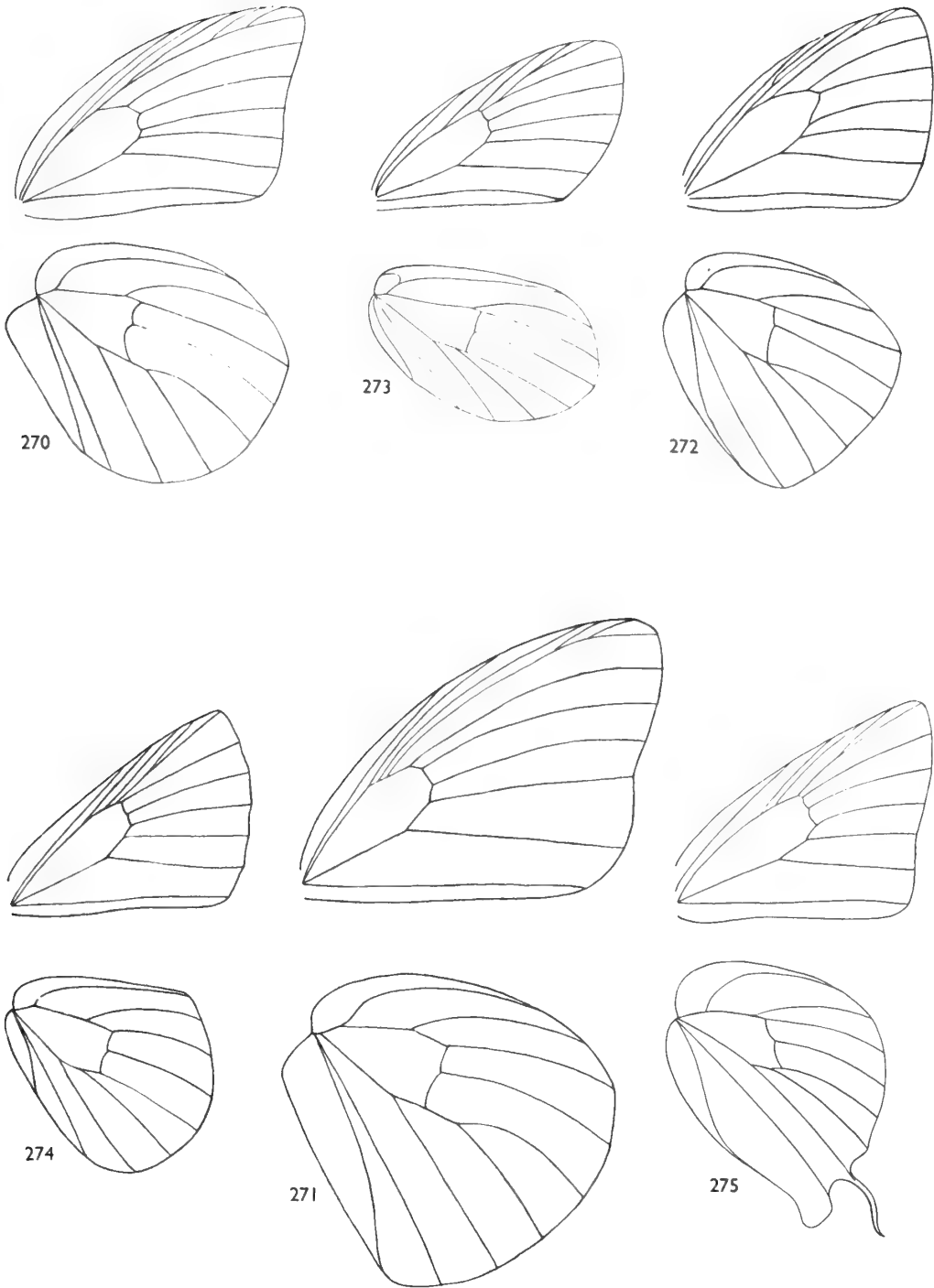


FIGS. 256-264. Wing venation of :—256, *Teratoneura isabellae* Dudgeon ; 257, *Iridana incredibilis* (Staudinger) ; 258, *Deloneura immaculata* Trimen ; 259, *Deloneura millari* Trimen ; 260, *Ebepius ochrascens* (Neave) ; 261, *Batelesia zebra* Druce ; 262, *Tumerepedes flava* Bethune Baker ; 263, *Neaveia lamborni* Druce ; 264, *Pseudoneaveia jacksoni* Stempffer.

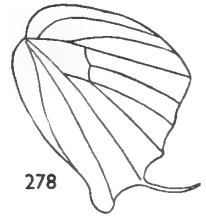
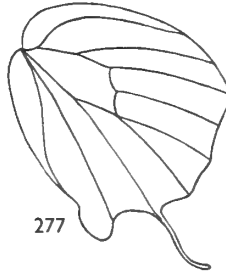
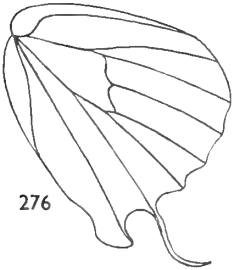
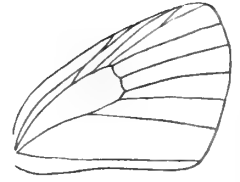
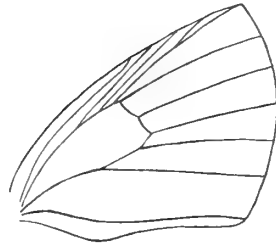
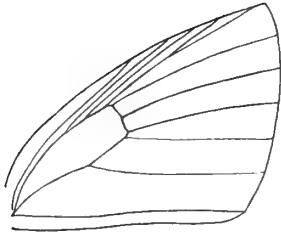


FIGS. 265-269. Wing venation of:—265, *Epitolina dispar* (Kirby); 266, *Stempfferia carcassoni* Jackson; 267, *Phytala elais elais* Westwood; 268, *Epitola posthumus* (Fabricius); 269, *Neoeptola barombiensis* (Kirby).





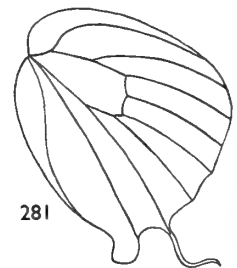
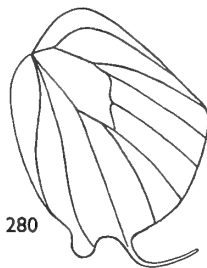
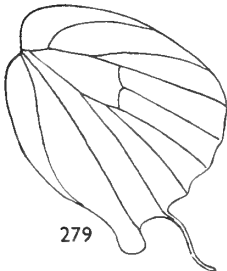
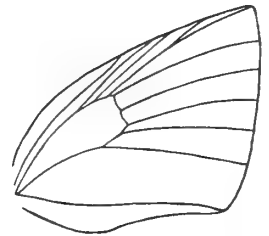
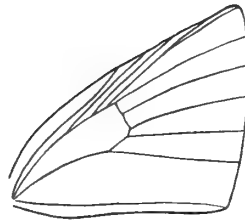
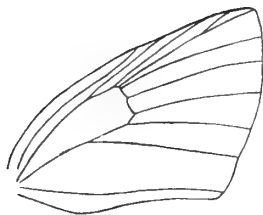
FIGS. 270-275. Wing venation of :—270, *Aethiopana honorius honorius* (Fabricius) ; 271, *Hewitsonia boisduvali boisduvali* (Hewitson) ; 272, *Powellana cottoni* Bethune Baker ; 273, *Megalopalpus simplex* Röber ; 274, *Lachnocnema bibulbus* (Fabricius) ; 275, *Deudorix epijarbas* (Moore).



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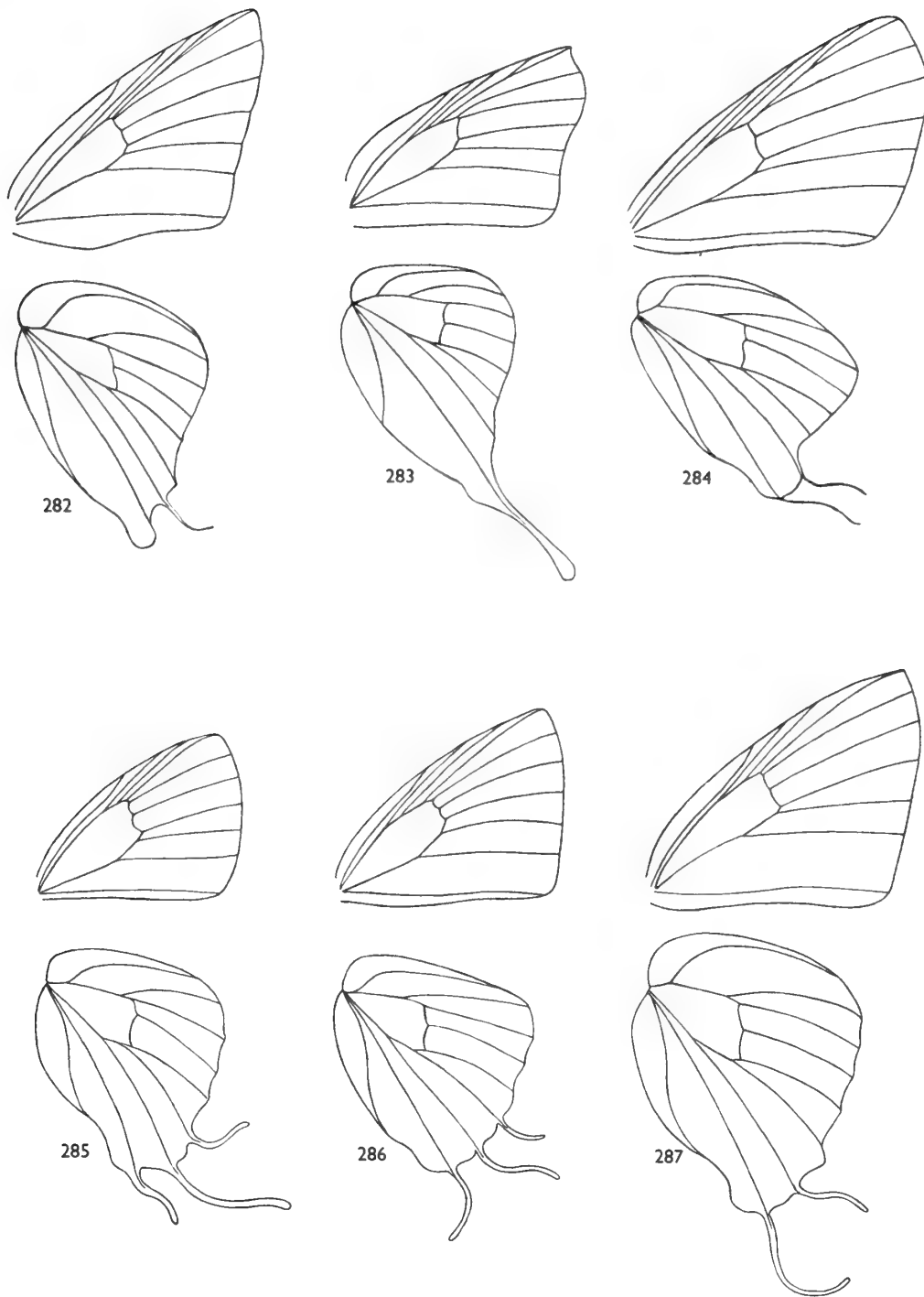


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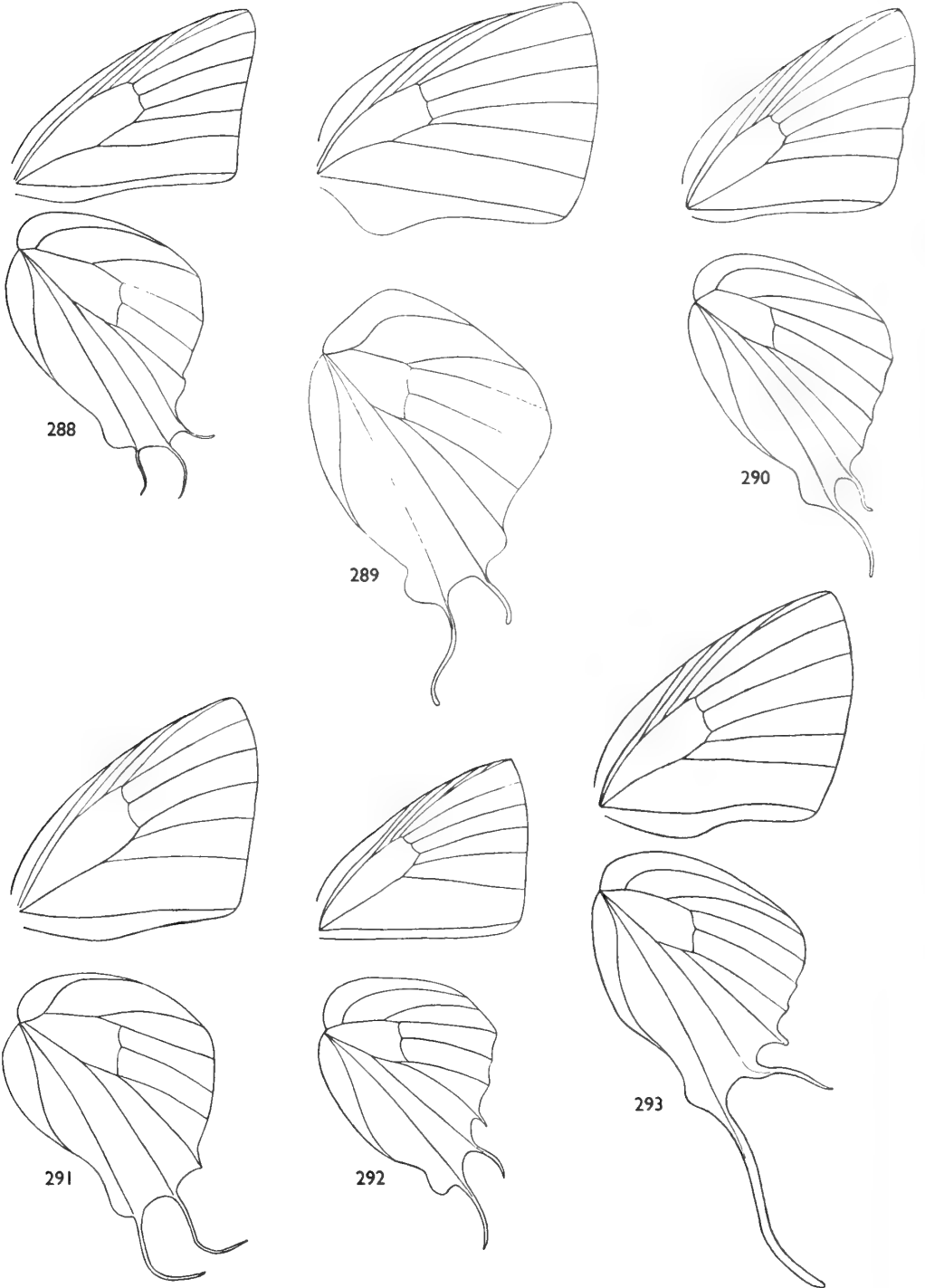
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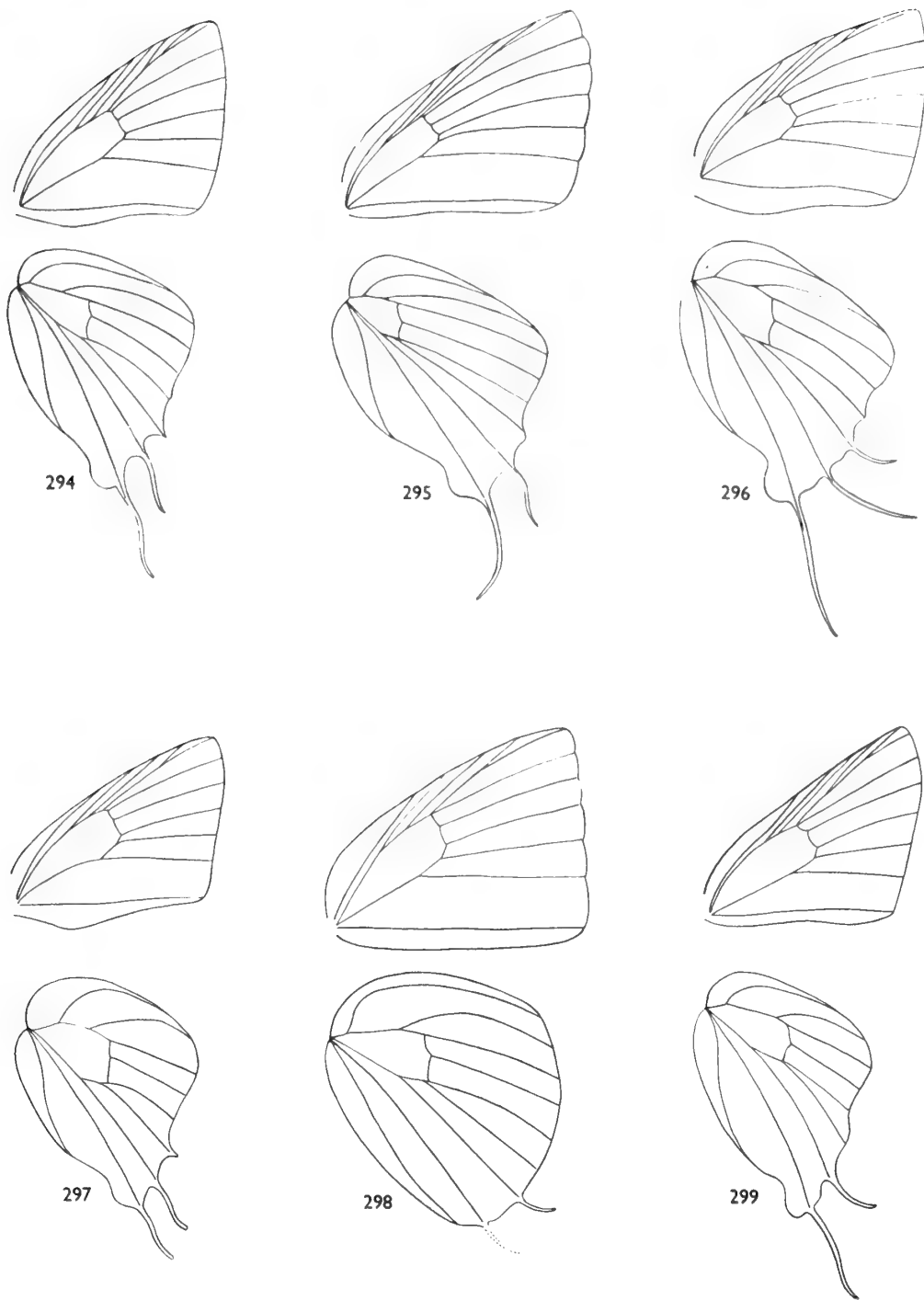
FIGS. 276–281. Wing venation of :—276, *Hypomyrina nomenia nomion* (Staudinger) ; 277, *Actis mimeta mimeta* Karsch ; 278, *Kopelates virgata* Druce ; 279, *Hypokopelates mera* (Hewitson) ; 280, *Pilodeudorix camerona* (Plötz) ; 281, *Diopetes deritas* (Hewitson).



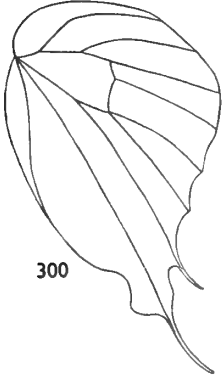
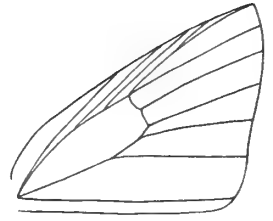
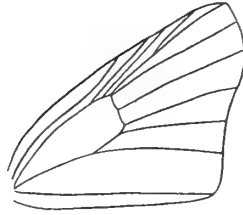
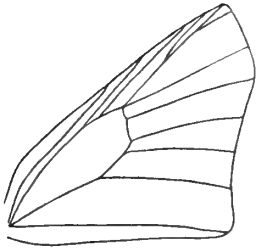
FIGS. 282-287. Wing venation of:—282, *Virachola perse* (Hewitson); 283, *Myrina silenus ficedula* Trimen; 284, *Pseudaletis agrippina* Druce; 285, *Oxylides faunus* (Drury); 286, *Syrmoptera melanomitra* Karsch; 287, *Hypolycaena sipylus* (Felder).



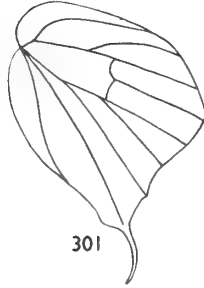
FIGS. 288-293. Wing venation of :—288, *Dapidodigma hymen* (Fabricius) ; 289, *Iolaus (Hemiolaus) coeculus coeculus* Hopffer ; 290, *Iolaus (Stugeta) bowkeri bowkeri* Trimen ; 291, *Iolaus (Pseudiolaus) poultoni* Riley ; 292, *Iolaus (Trichiolaus) mermeros* (Mabille) ; 293, *Iolaus (Tanuethira) timon orientius* Hulstaert.



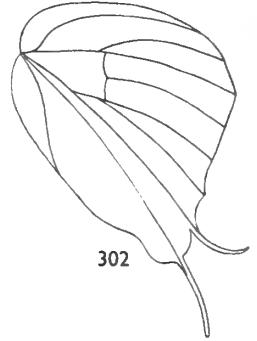
FIGS. 294-299. Wing venation of :—294, *Iolaus (Argiolaus) silas silas* Westwood ; 295, *Iolaus (Aphniolaus) pallene* (Wallengren) ; 296, *Iolaus (Iolaus) eurisus* (Cramer) ; 297, *Iolaus (Epamera) sidus* Trimen ; 298, *Iolaus (Sukidion) inores* Hewitson ; 299, *Aphnaeus oreas oreas* (Drury).



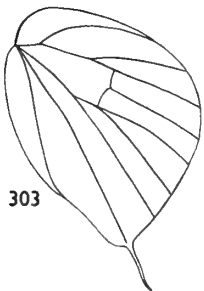
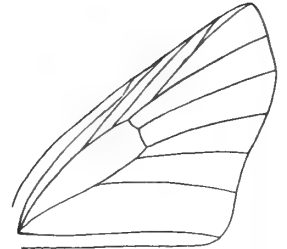
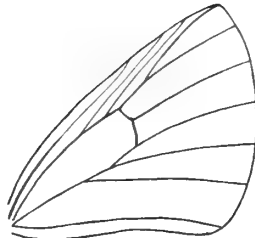
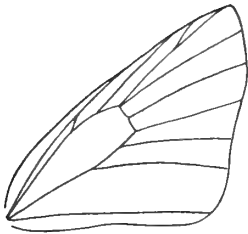
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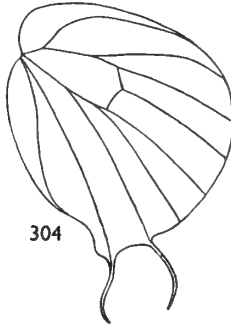
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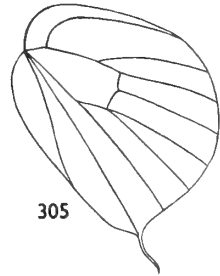
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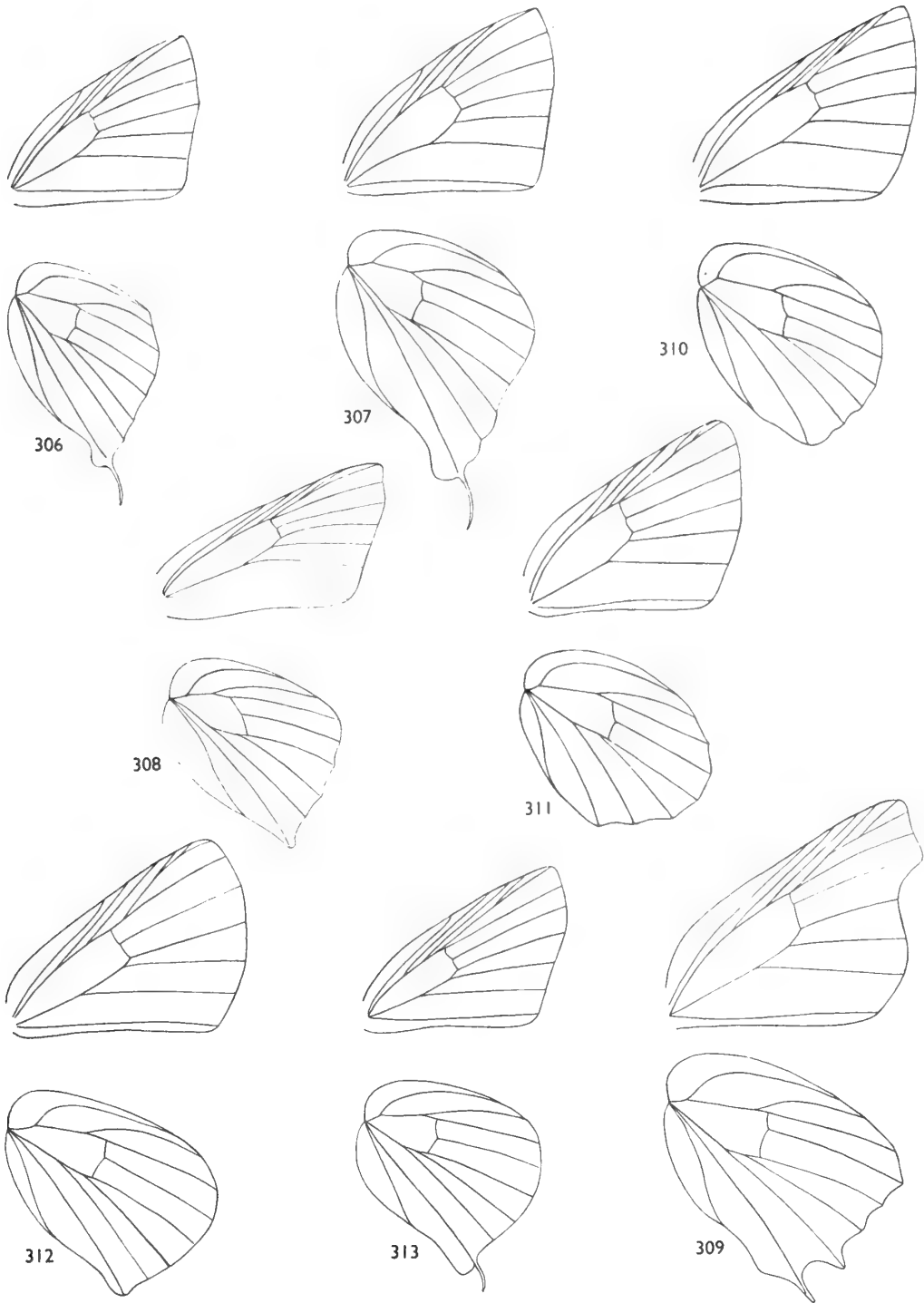


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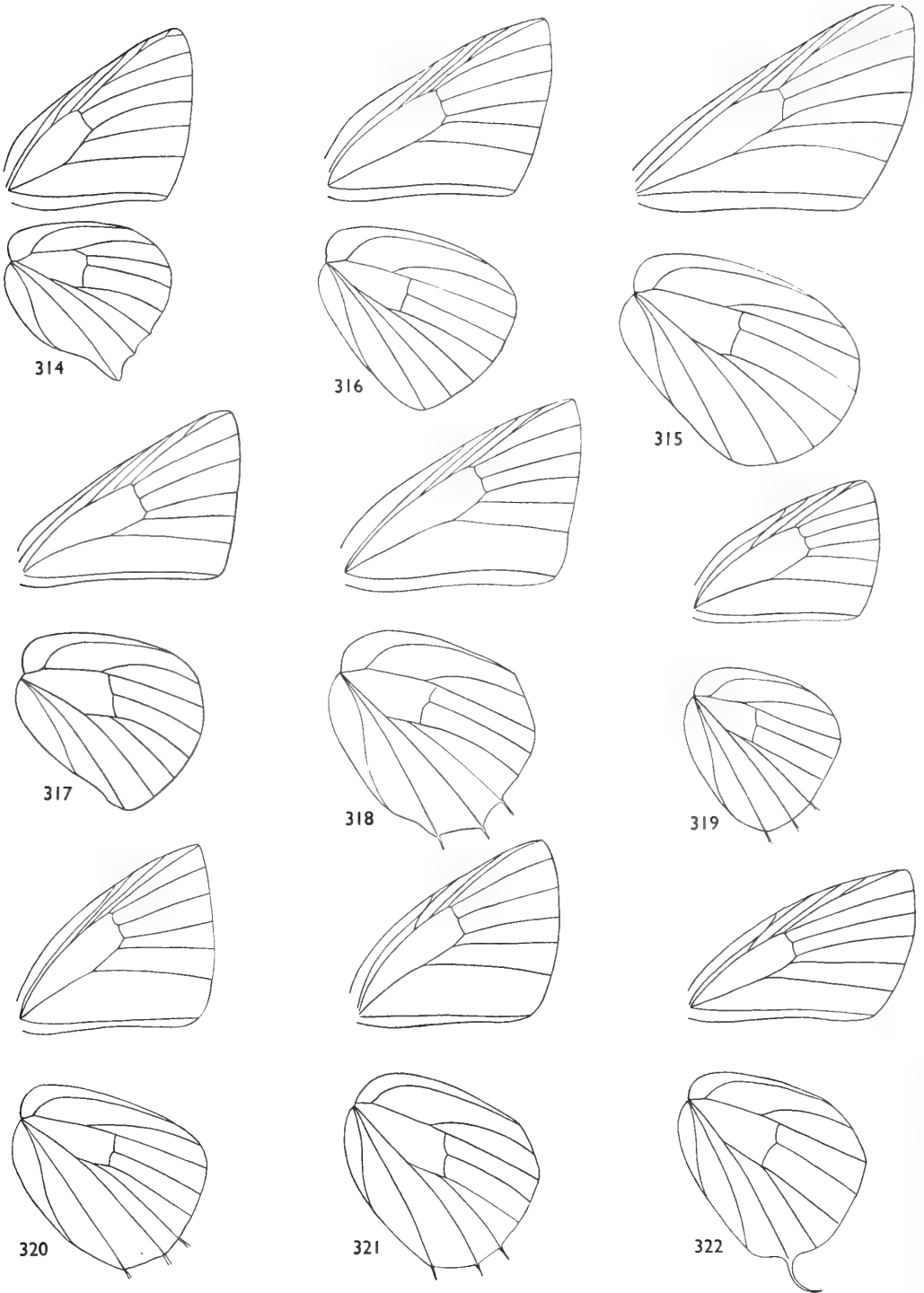


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 303, *Chloroselas tamaniba esmeralda* Butler ; 304, *Zeritis neriene neriene* Boisduval ;  
 305, *Desmolycaena mazoensis* Trimén.

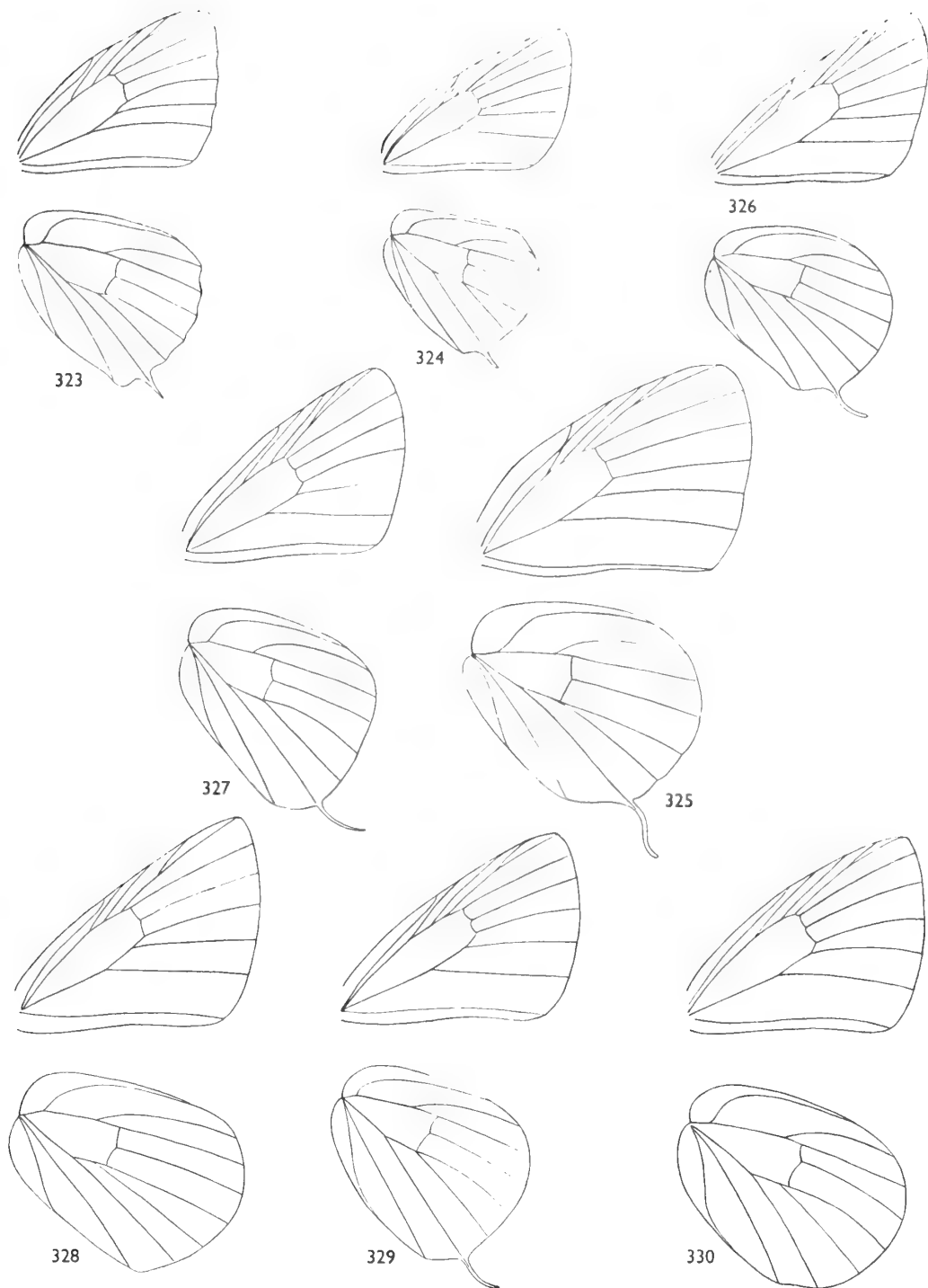


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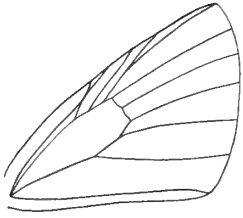


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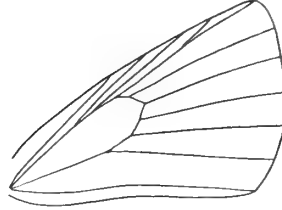




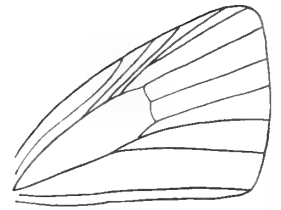
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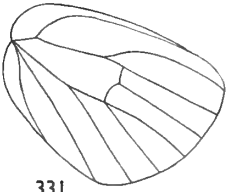
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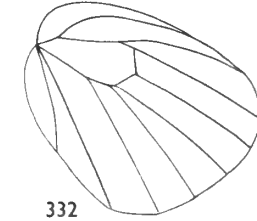
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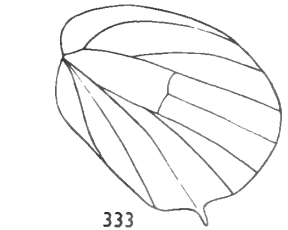
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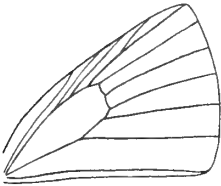
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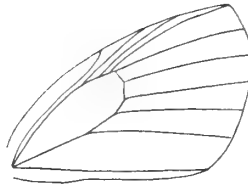
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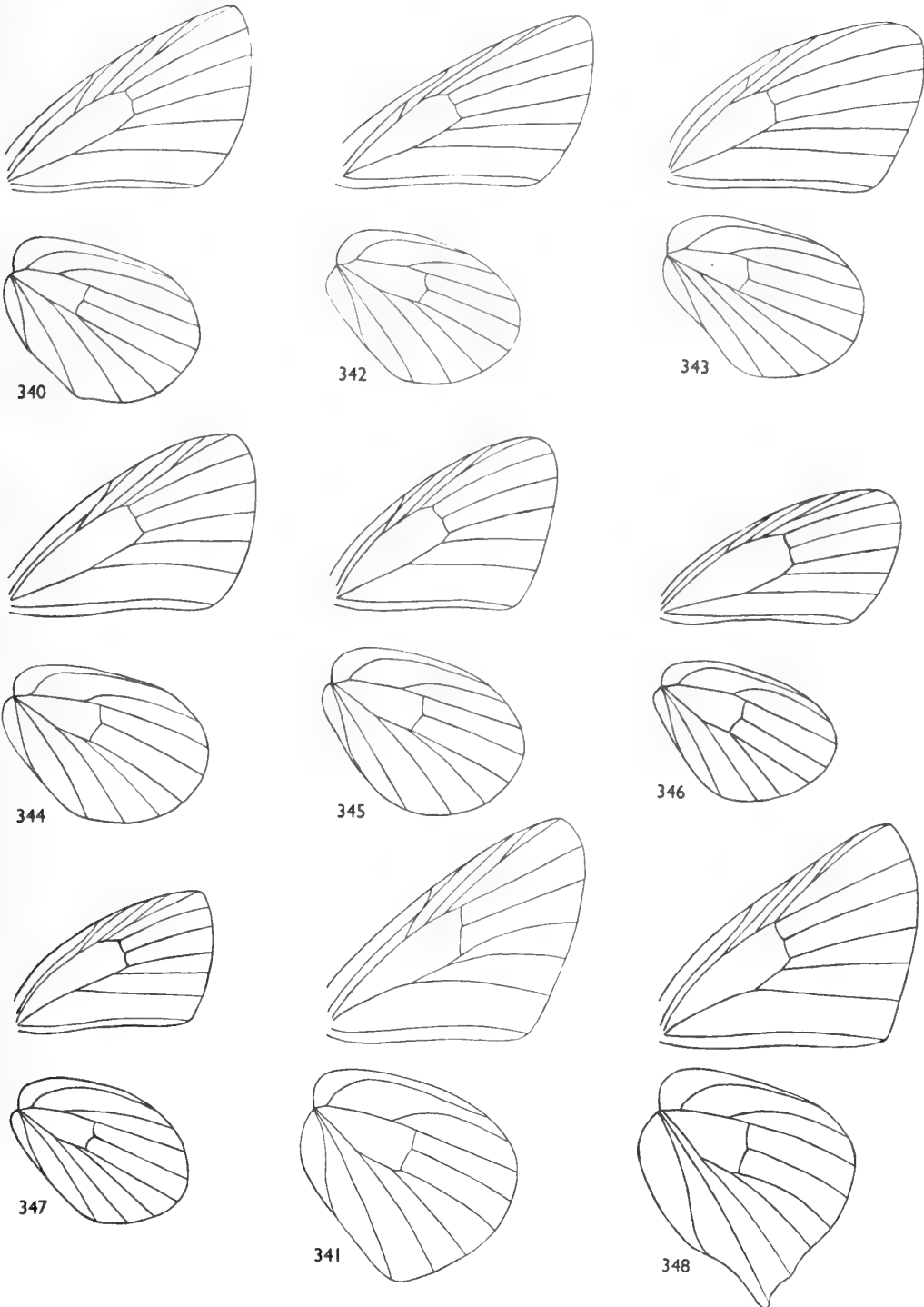


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THYSANOPTERA COLLECTIONS

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BY

L. A. MOUND

British Museum (Natural History)

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By L. A. MOUND

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## SYNOPSIS

Between 1907 and 1936 R. S. Bagnall published almost 700 of the 5,000 names now available in the Insect Order Thysanoptera. This review consists largely of an annotated catalogue of these generic and specific names and includes 134 new synonymies and 39 new combinations. The original descriptions have been compared in each case with the material remaining in Bagnall's Collection, lectotypes are selected for many species and the original host and locality data are quoted for each species. Full synonymic histories are not given for each species, however. Biographical notes are included, also a general account of the history of the collections, with a list of the missing species and a list of the species ascribed to Bagnall in error.

## INTRODUCTION

R. S. BAGNALL was one of the most outstanding amateur entomologists of the first thirty years of this century. A brilliant field worker known mainly for his studies on Thysanoptera and Collembola, he also published numerous papers on other Orders of insects and arthropods. Between the years 1907 and 1936 he published in the Order Thysanoptera alone some 577 species-group names and 100 genus-group names as well as a number of Family and other higher groups. The importance of this contribution can be gauged from the fact that Uzel's Monograph of the Thysanoptera lists only 135 species in 36 genera up to the year 1895. Bagnall and Professor

H. Priesner of Linz were largely responsible for our present knowledge of European Thysanoptera, and between them they also established a framework of classification of the African and Oriental forms. Unfortunately Bagnall was prevented by his business interests from spending as much time as he would have liked on entomology. For many years he was unable to maintain in one place a systematically arranged collection of either insects or literature, and as a result he never produced any synthesis of his work. It was probably this lack of revisionary studies, combined with the discord resulting from the disposal of his collection in 1932, that resulted in his concentration on the green fields of the Collembola.

Bagnall gave up serious work on the Thysanoptera at a time when the species concept within the group was coming under increasing scrutiny (Priesner, 1934-1935 on *Elaphrothrips*; Speyer, 1934 & 1935 on *Thrips* and *Aptinothrips*). Later studies on heterogonic growth in *Elaphrothrips* by both Hartwig and Hood, and the studies on normal variation in species of *Dendrothrips* and *Haplothrips* by Faure, and *Chirothrips* by zur Strassen were quite different in their basic approach. Bagnall's main effort was directed towards finding differences between individual insects, whereas the present day accent on population ecology and economically important species directs the taxonomist's effort towards finding correlations between different populations. Bagnall's own studies on *Thrips* and *Odontothrips*, as well as on the Australian gall-forming Tubulifera, were based on the assumption that these insects were in all cases extremely host-specific, and his studies on the larger Phlaeothripidae were made without appreciating the extraordinary range of variation now known to exist in many species.

In spite of the advances in knowledge of the Thysanoptera since 1935, many of Bagnall's nominal species have never been re-examined since they were first described. The emphasis placed on some characters has changed over the years and as a result, this review includes 134 new specific and generic synonymies and 39 new combinations. This involves nominal species described by authors other than Bagnall where type material is in the British Museum (Natural History) or was readily available to the present author from other sources. Of the forms described by Bagnall, 66 generic and 383 specific names are accepted here, although this is likely to be reduced by further studies even if some of the present author's new synonymy has to be rejected. One of the major problems is the inferior state of specimens on which some species are based. On more than one occasion a new species appears to have been described solely because a previously described form was not in a suitable state for comparison. Remounting of critical specimens and examination with a modern phase-contrast microscope cannot always resolve the difficulties. Sometimes Bagnall did not appreciate that he was describing artefacts. Thus he describes a species as short and fat when the specimen is merely contracted due to dehydration before death. The exposed dorsal surface of the tube in such contracted specimens of the Phlaeothripidae is compared with the full ventral length of the tube of expanded specimens, giving very different tube length/head length ratios.

Bagnall described his species in over 120 separate publications, and the present

review was begun as a bibliography and catalogue of the type specimens because of the number of slides in his collection bearing manuscript names. As the work progressed it was found necessary to include new synonymy, and so several genera have also been redefined, with keys to the species examined by the present author, and a few species have been redescribed where this appeared to be of particular value. This work could only have been produced through the co-operation of many other Thysanopterists, to all of whom the author would like to express his thanks. Much of the new synonymy published here for the Terebrantia is derived from conversations with my colleague Edward R. Speyer. Dr. Guy Morison helped with the British species particularly, and during the author's visits to Aberdeen gave valuable advice on field work. Professor H. Priesner, Dr. R. zur Strassen, and particularly Miss Kellie O'Neill have loaned material and given detailed replies to the author's queries in correspondence. Professor S. F. Bailey kindly loaned his manuscript bibliography of Bagnall's Thysanoptera, and specimens were received from the following workers: Professor T. N. Ananthkrishnan; Dr. J. S. Bhatti; Professor A. Bournier; Dr. T. Kono; Dr. J. Pelikan; Mr. E. Reed; Professor L. de Santis; Dr. L. J. Stannard; Dr. E. Titschack. With the exception of figure 11, which was drawn by Mr. Arthur Smith, the text-figures were drawn by Mr. B. R. Pitkin.

#### BIOGRAPHICAL NOTES

Richard Siddoway Bagnall was born at Winlaton, near Whickham in the County of Durham, just outside Newcastle on Tyne on the 14th July, 1889 (teste the late F. Laing). According to an obituary notice in *The Vasculum* (July 1962, p. 11), he was the son of Mr. J. S. Bagnall, a member of the firm of R. S. Bagnall and Sons, forgemen and chainmakers of Swalwell and South Hylton. In unpublished notes dated 1921 Bagnall refers to himself as 'Forgemaster and Director of Engineering Works, Rydal Mount, Blaydon on Tyne'. He was educated privately and soon developed an interest in Natural History. In 1903 he was awarded the Hancock Prize for an essay 'An October Day in Gibside' about the joys of beetle collecting. I have been unable to confirm the statement in the obituary notice published by the Royal Entomological Society of London (*Proc. R. ent. Soc. Lond. C*, 27: 50, 1962-63) that he was trained as a chemist, or the title 'Sir Richard' given to him in the *Directory of Zoological Taxonomists, Illinois, 1961*. Although an energetic man it appears that his health was never very good, possibly as a result of an attack of meningitis in his youth, and he died on the 19th January, 1962, after a series of cerebral thromboses.

He was elected a Fellow of the Entomological Society of London in 1904, a Fellow of the Linnean Society of London on the 4th November, 1909, and a Fellow of the Royal Society of Edinburgh in 1920. He was also a member of learned societies in Belgium, France, Italy and Spain. He was one of the honorary curators of the Hancock Museum, Newcastle on Tyne, and also one of the founders of *The Vasculum* in 1915. In 1929 he was presented by Dr. J. W. Harrison to the University of Durham for the honorary degree of D.Sc., and the *University Journal* for that year

refers to him as the best entomological field worker in the country and one of the world's authorities on thrips. The total of his publications probably approached 300 of which 125 referred to Thysanoptera. He was particularly interested in Zooecidia (with J. W. Harrison) and the apterygote insects and myriapods. He was clearly an excellent naturalist and his contemporaries refer to his remarkable powers of finding small arthropods in the field. However, his habit of pronouncing on 'new species' with only the help of a hand lens was regarded as rather eccentric. Although of a cheerful and friendly disposition, his methods of curation and mercurial temperament resulted in a number of bitter personal attacks during the 1930s.

According to the account books of the University of Oxford (teste E. B. Poulton) Bagnall was paid as an assistant curator of the Hope Department and as a special demonstrator in the Department of Zoology for the period October 1912 until 1st January, 1914. Thereafter his business affairs seem to have involved him in considerable travelling. During the period 1904-1949 he has been recorded as having 17 different addresses (teste G. D. Morison). As a result he did not always have access to his collections of insects or literature and he had to borrow papers from other workers. Much of his descriptive work was apparently done without reference to specimens of previously described species. He continued to work on Thysanoptera until shortly before his death, although he ceased publication in 1936. As a result his collection contains numerous manuscript names, although in many cases the specimens can now be referred to common British species.

#### THE COLLECTIONS

As a result of his peripatetic way of life Bagnall, for many years, was unable to keep his collection of Thysanoptera available for study in any one place. Much of it had to be kept in store for varying lengths of time apart from the year he spent at Oxford in 1913. His correspondence and sometimes his publications refer to the fact that he was unable to check some point of detail 'as my collection is not immediately available'. For this reason in 1932 he decided to ask the Trustees of the British Museum (Natural History) to purchase the collection in order that it should be properly curated and more readily available for his use. At that time there were about 17,000 specimens in the collection, of which 5,000 were on slides. There were 430 Type specimens and 750 paratypes. However, in addition to this, Bagnall had presented specimens to the Museum over the preceding years and continued to present them until his death. He also described a number of species from material already in the British Museum collection, and these combined collections now contain about 10,000 slides of more than 1,200 recognized species, in addition to unworked material.

*Black slides.* During 1913 Bagnall experimented with a new mountant. Many slides made during that year, including some type specimens, have turned dark brown to jet black. When viewed with a strong light the specimens on these slides can be seen to be partially dissolved, leaving a series of large pale crystals. The mountant of one such slide was found to dissolve readily in phenol, but of the specimen only a wing, a leg and some abdominal sclerites remained intact. It is

possible that large specimens such as the *Eupathithrips affinis* holotype might be recovered when they are needed, but small specimens such as *Baliothrips biformis* have degenerated too much. Some of the species listed below as missing may have been lost by Bagnall himself in attempting to remount from such blackened slides. The mountant may have been a mixture of balsam in chloral hydrate and phenol, as this has recently been shown to have the same behaviour.

*Carded specimens.* Bagnall described many species from dry specimens mounted on cards, although this is not always clear from the description. Some of these specimens were seriously damaged by fungus. In a few cases the insect was covered by a network of hyphae, a spectacular condition which was not found to be as serious as an internal fungal attack destroying the intersegmental membranes. The external hyphae have now been dissected free and the specimens removed with the loss of only a few setae in many cases, but internal fungal attacks left several specimens excessively fragile. About 100 specimens, mainly types, have been removed from cards and mounted in balsam although some of these are seriously damaged.

*Specimens in tubes.* Several hundred tubes were received from Bagnall by the British Museum. Most of these are still unclassified. They are dry, often without labels, but in some cases contain the remains of series from which species were described. Preliminary sorting has not disclosed any of the species listed below as missing.

*Labelling of specimens.* Data on the slide labels has been checked with the published data for each species. Unfortunately Bagnall sometimes did not write the collection data on the slides and in the text below this is indicated by enclosing such data, and any other information, in square brackets.

*Missing species.* Type material of the following species has not been found.

#### Thripidae

*Odontothrips vuilleti*

#### Phlaeothripidae

*Docessissophothrips frontalis*

*Elaphrothrips femoralis, laevicollis, propinquus*

*Haplothrips nigricans*

*Kleothrips ceylonicus*

*Leeuwenia indica*

*Phlaeothrips gallicus*

*Rhaeothrips major*

*Sedulothrips insolens*

*Tetracanthothrips borneensis*

*Trybomia intermedia*

#### Fossil species

*Amorphothrips klebsi*

*Physothrips connaticornis, gracilicornis*

*Procerothrips cylindricornis*

## LECTOTYPE DESIGNATIONS

Only in a few of his descriptions of new species did Bagnall designate a specific individual as a 'holotype' or 'type', and in most of these cases the designation consists of the statement 'type in Coll. Bagnall'. Where a species was described on a unique the holotype status of the specimen is not in question, but where there was a series Bagnall wrote 'Type' on two specimens, a male and a female. For this reason, and because the published place of deposition is frequently incorrect, the present author has in many instances selected lectotypes during the course of this work. Such lectotype selection is indicated as LECTOTYPE, and except where indicated to the contrary the specimens listed under each species are now in the general collection of Thysanoptera in the British Museum (Natural History). Lectotypes have been selected from those specimens originally labelled as 'Type', except where otherwise indicated in the text, after comparing the specimens and their data with the original publication. Where several individuals are mounted together on a slide, however, it was considered desirable to refer to these as syntypes.

## SPECIES ASCRIBED TO BAGNALL IN ERROR

Bagnall frequently wrote a new name and the indication 'Type' on specimens in his collection, but many such names were never published. However, the names were made available to other writers and have in the following cases been published, giving Bagnall as the author.

*Dendrothrips cameroni* Priesner, 1965 : 281-283. Although ascribed to Bagnall by Priesner when he described this species no specimens bearing this name have been found in Bagnall's collection.

*Eurhynchothrips castor* and *E. pollux*, nomina nuda in Kelly and Mayne, 1934 : 52. *Frankliniella kellyana* Kelly & Mayne, 1934 : 20, a synonym of *F. schultzei* (Tryb.), q.v.

*Gamothrips connaticornis* Priesner, 1965 : 214, a synonym of *Astrothrips roboris*, q.v.

*Oedemothrips australis* and *O. nigricans*, nomina nuda in Kelly & Mayne, 1934 : 51.

*Sericothrips bedfordi* Priesner, 1965 : 243-244, a synonym of *S. occipitalis* Hood, 1917 : 32-34. **Syn. n.** Hood described this species from Nigeria and the present author has studied material from Nigeria, Sudan, Kenya, Malawi, Tanzania and Transvaal.

*Tetrachaetothrips*, nomen nudum in Priesner, 1949 : 150, a synonym of *Gynaikeothrips*.

## RECENT THYSANOPTERA

## AEOLOTHRIPIDAE

*Aeolothrips brevicornis* Bagnall

*Aeolothrips brevicornis* Bagnall, 1915a : 317.

*Aeolothrips africanus* Moulton, 1936 : 495-496.



Originally described from a single female, this species is apparently common in South Africa. The colour of antennal III, the relative lengths of antennals V, and VI to IX, and the chaetotaxy of the head and pronotum are generally regarded as being variable. The setae on the head and pronotum of the types of *africanus* are particularly stout.

Holotype ♀. SOUTH AFRICA : Cape Town, from a flower, 13.vii.1904 (*E. B. Poulton*).

Allotype ♂ (*Moulton*, 1936). SOUTH AFRICA : Mossel Bay, vi-vii.1930 (*R. E. Turner* 5146).

### *Aeolothrips bucheti* Bagnall

*Aeolothrips bucheti* Bagnall, 1934e : 484-485.

Originally described as differing from *citricinctus* and *citricollis* by the shorter sensoria on antennals III and IV, and the greater length of segment IV relative to III, this species is very close to *citricinctus*. They have been collected together in Tangiers, and may yet prove to be synonymous. Antennal IV varies from as long as III to about 0.77 of this length. The sensorium on III varies from 0.31 to 0.38 of the length of that segment in the seven females available.

LECTOTYPE ♀. TANGIER : May, 1901 (*G. Buchet*).

### *Aeolothrips citricinctus* Bagnall

*Aeolothrips citricinctus* Bagnall, 1933c : 649-650.

*Aeolothrips citricollis* Bagnall, 1934d : 126-127. **Syn. n.**

*Aeolothrips citricinctus* Bagnall ; Bagnall, 1934e : 483-485.

The species *citricollis* was based on a single specimen and was distinguished from *citricinctus* by the more slender body and antennae. However, in the holotype of *citricollis* antennals III and IV are 5.5 and 4.9 times as long as broad, whereas in the paratype female of *citricinctus* they are 6.1 and 4.6 times as long as broad.

'Types' ♀. TANGIER : end of May, 1901 (*G. Buchet*). Paris Museum.

Paratypes ♀ with identical data in B.M. (N.H.).

Holotype ♀ of *citricollis*. FRANCE : Perpignan, in fl. *Centaurea solstitialis*, viii.1926 (*R.S.B.*).

### *Aeolothrips collaris* Priesner

*Aeolothrips collaris* Priesner, 1919a (March) : 119-120.

*Aeolothrips fulvicollis* Bagnall, 1919 (October) : 253-254. **Syn. n.**

*Aeolothrips brevicinctus* Bagnall, 1934d : 125.

*Aeolothrips collaris* f. *fulvicollis* Bagnall ; Priesner, 1948 : 340.

Bagnall distinguished *fulvicollis* originally from *fasciatus* (Linn.) by the yellowish colour of the pronotum, but the species does not appear to differ essentially from *collaris* described that same year from Albania. The dark transverse markings on the fore wings were considered to be narrower in *brevicinctus* than in *collaris*, but these markings are known to be variable, and the chaetotaxy of the ninth abdominal segment in the males is identical in both forms.

LECTOTYPE ♀ of *fulvicollis*. INDIA : Cawnpur, in fl. *Verbascum*, 20.iii.1911 (A. D. Imms).

LECTOTYPE ♀ of *brevicinctus*. FRANCE : St. Cyr-sur-Mer, in fl. crucifer, ix.1927.

### *Aeolothrips ericae* Bagnall

*Aeolothrips ericae* Bagnall, 1920 : 60-61.

This species was distinguished from *fasciatus* (Linn.) by the pale basal antennal joints and the presence of a pair of stout sickle-shaped bristles on the ninth abdominal segment in the male. The species comes near *collaris*, but the median pale wing bar is usually parallel-sided rather than V-shaped, and the tenth abdominal segment of the female rather paler than the preceding segment.

The type is not in the Bagnall collection, and is probably lost. The original description was based on material from various localities including Ilfracombe, and the following specimens can be regarded as syntypes.

Syntypes, 2♀, 1♂. ENGLAND : Devon, Ilfracombe, on *Erica*, viii.1913 (R.S.B.).

### *Aeolothrips gloriosus* Bagnall

*Aeolothrips gloriosus* Bagnall, 1914f : 375-376.

This is a very distinctive species with yellow legs, head, thorax and anterior abdominal segments. Antennal segments one and two, and the basal half of three are also yellow. The original description refers to three females collected by Dr. A. H. Krausse at Sorgono, Sardinia, and submitted to Bagnall by the 'German Entomological Museum'. These specimens are not in the Deutsches Entomologisches Institut or the Humboldt University Museum in Berlin. However, there is in the British Museum (Natural History) a single female of this species labelled 'SARDINIA, Sorgono, Coll. Dr. A. H. Krausse, In tube purchased by R. S. Bagnall'. There were three labels on the right-hand side of the slide, the first two are both marked 'Type' but the uppermost label is marked 'Comp. with Type'. The male has not been described but there is a male bearing the same collection data as the above female in the British Museum collection. This specimen has a brown head, thorax and tibiae. The ninth abdominal segment resembles *ghabni* Priesner in its chaetotaxy, but the first antennal segment and the ring vein of the fore wing are much paler than in that species.

***Aeolothrips intermedius* Bagnall**

*Aeolothrips intermedius* Bagnall, 1934d : 123-124.

Although compared originally with *anthyllidis*, this species is very similar to *fasciatus* (Linn.). Males of *intermedius* have no setae longer than the claspers on the ninth abdominal segment, whereas the seta at the base of the claspers in *fasciatus* exceeds the claspers in length. The species was described from England, France, Italy and Switzerland.

LECTOTYPE ♀. SWITZERLAND : Zurich, Uteberg, 2,500 ft., *Medicago sativa*, vii.1925 (R.S.B.).

***Aeolothrips melaleucus* Haliday**

*Aeolothrips* (*Coleothrips*) *melaleuca* Haliday, in Walker, 1852 : 1117.

*Aeolothrips uzeli* Bagnall, 1934b : 482. **Syn. n.**

*Aeolothrips melaleucus* Haliday ; Priesner, 1964 : 19.

Although compared initially with *versicolor*, the specimen on which *uzeli* was based cannot be distinguished at present from *melaleucus*.

Holotype ♀ of *uzeli*. MANCHURIA : Ourga Tsitsikhar (*Chaffanjon*, 174-95).

***Aeolothrips propinquus* Bagnall**

*Aeolothrips propinquus* Bagnall, 1924j : 269.

*Aeolothrips fasciatus* var. *propinquus* Bagnall ; Bagnall 1926f : 280.

*Aeolothrips propinquus* Bagnall ; Titschack, 1964 : 61-65.

Titschack has given a detailed comparison of *propinquus* and *astutus* Priesner. The species resembles *tenuicornis* in the dark ring vein at the fore wing apex, but differs in the proximity of the accessory setae on sternite seven to the hind margin of that segment, and the greater length of the sensoria on antennals III and IV. Although three localities are given in the original publication only a single specimen, labelled 'Type', remains in the Bagnall collection. This bears the date vi.1924, although the published date of collection was vii.1924.

LECTOTYPE ♀. ENGLAND : Surrey, Woldingham, on *Verbascum nigrum*, vi.1924.

***Aeolothrips pyrenaicus* Bagnall**

*Aeolothrips pyrenaicus* Bagnall, 1934e : 482-483.

Although belonging to the *fasciatus* group, this species has the ring vein of the fore wing dark as in *tenuicornis*. The male is unknown.

LECTOTYPE ♀. FRANCE : l'Hospitalet, 5,500 ft., on *Cistus*, viii.1926 (R.S.B.).

***Aeolothrips tenuicornis* Bagnall**

*Aeolothrips tenuicornis* Bagnall, 1926f : 280.

*Aeolothrips anthyllidis* Bagnall, 1932a : 161-162. **Syn. n.**

*Aeolothrips clavicornis* Bagnall, 1934d : 122-123. **Syn. n.**

This species can be distinguished from the *fasciatus* group by the close proximity of the median setae on the margin of the female seventh sternite, and the presence of sickle-shaped setae on the male ninth tergite. The ring vein of the fore wing is dark at the apex, and the species is often associated with the flowers of *Verbascum*. Bagnall compared *clavicornis* to *pyrenaicus*, although the latter species belongs to the *fasciatus* group. The species *anthyllidis* was distinguished from *tenuicornis* by the narrower wings, the width of the fore wings at the distal third in the two lectotypes being 200 $\mu$  and 220 $\mu$ .

LECTOTYPE ♀. ENGLAND : Surrey, Woldingham, on *Verbascum*, vii.1924 (R.S.B.).

LECTOTYPE ♀ of *anthyllidis*. ENGLAND : Surrey, Coulsdon, on *Anthyllis*, vi.1925.

LECTOTYPE ♀ of *clavicornis*. ENGLAND : Brighton, on *Ulex*, v.1926 (R.S.B.).

***Aeolothrips variicornis* Bagnall**

*Aeolothrips variicornis* Bagnall, 1932c : 290.

A second specimen of this species has been collected recently from Kenya. Antennal III is clear yellow and the accessory setae on sternite seven are close to the hind margin of that sclerite.

Holotype ♀. TANGANYIKA: Arusha, Rasha-rasha, on Onion, viii. 1926 (*A. H. Ritchie* 509).

***Aeolothrips versicolor* Uzel**

*Aeolothrips versicolor* Uzel, 1895 : 69-70.

*Aeolothrips maculosus* Bagnall, 1920 : 62.

*Aeolothrips maculosus* var. *costalis* Bagnall, 1920 : 62.

*Aeolothrips parvicornis* Bagnall, 1920 : 62. **Syn. n.**

*Aeolothrips tiliae* Bagnall, 1913e : 156-157.

The dark markings on the fore wings of *versicolor* vary from a single broad band to two narrow bands connected by a dark line on the hind margin. The species *parvicornis* falls in the latter part of this range and has rather short antennae. Bagnall used *maculosus* as a nomen novum for *melaleucus* of Uzel nec Haliday, but both this and the variety *costalis* are now recognized as *versicolor*. Although Bagnall indicates that he collected both sexes of *tiliae*, only two females remain in the collection.

Holotype ♀ of *costalis*. ENGLAND : Yarnton, on *Fraxinus*, xi.1914 (R.S.B.).

LECTOTYPE ♀ of *parvicornis*. HUNGARY : Hunzentmiklos, 28.viii.1910 (*Horvath*).

LECTOTYPE ♀ of *tiliae*. NORWAY : Bygdo near Christiania, on lime leaves, vi.1909 (*R.S.B.*).

### ALLELOTHRIPS Bagnall

*Allelothrips* Bagnall, 1932c : 288–289. Type-species *A. cincticornis*, by monotypy.

*Pseudaeolothrips* Bagnall, 1932c : 290. Type-species *P. cameroni*, by monotypy.

*Arhipidothrips* Bagnall, 1932c : 293. Type-species *A. tenuicornis*, by monotypy.

*Allelothrips* Bagnall ; Stannard, 1961 : 9–11.

This genus was defined largely on the number of maxillary palp segments and the form of the antennal sensoria. The three nominal genera were separated on the fact that the maxillary palpi were two-segmented in *Arhipidothrips*, three-segmented in *Pseudaeolothrips*, and seven- or eight-segmented in *Allelothrips*. Stannard has indicated that these characters cannot be used to define genera within this group of Aeolothripids. Unfortunately the granular-like markings on the fore wing, mentioned by Stannard as a generic character, are absent in the males of *tenuicornis*.

This genus is apparently related to *Mymarothrips* in the sub-basal constriction and the granular-like markings (reduced microtrichia) of the fore wing and also the well developed costal setae. The most distinctive character present in the following species is the sculpture of the metanotum (Text-fig. 1) ; *cameroni* Bagnall, *cincticornis* Bagnall ; *pandyani* (R. & M.) ; *talithae* Faure ; *tenuicornis* Bagnall. In addition, *brunneus* Faure is described as having a striate metanotum. Bhatti (1964) indicates that *ananthakrishnani* Stannard is a synonym of *pandyani*. These six species may be separated by use of the following key.

#### KEY TO ALLELOTHRIPS SPECIES

1	Antennals I and II brown, at least in part . . . . .	2
–	Antennals I and II not brown . . . . .	3
2	Antennal IV brown in distal half, antennal V subequal to VI–IX . . . . .	<i>cameroni</i>
–	Antennal IV not brown, antennal V much shorter than VI–IX . . . . .	<i>tenuicornis</i>
3	Antennal IV brown with sinuate sensorium, antennals VI–IX pale . . . . .	<i>cincticornis</i>
–	Antennal IV not brown . . . . .	4
4	Head longer than prothorax . . . . .	<i>pandyani</i>
–	Head shorter than prothorax . . . . .	5
5	General colour yellow to light brown, antennal V–IX distinctly darker brown . . . . .	<i>talithae</i>
–	General colour brown, antennals V–IX light brown . . . . .	<i>brunneus</i>

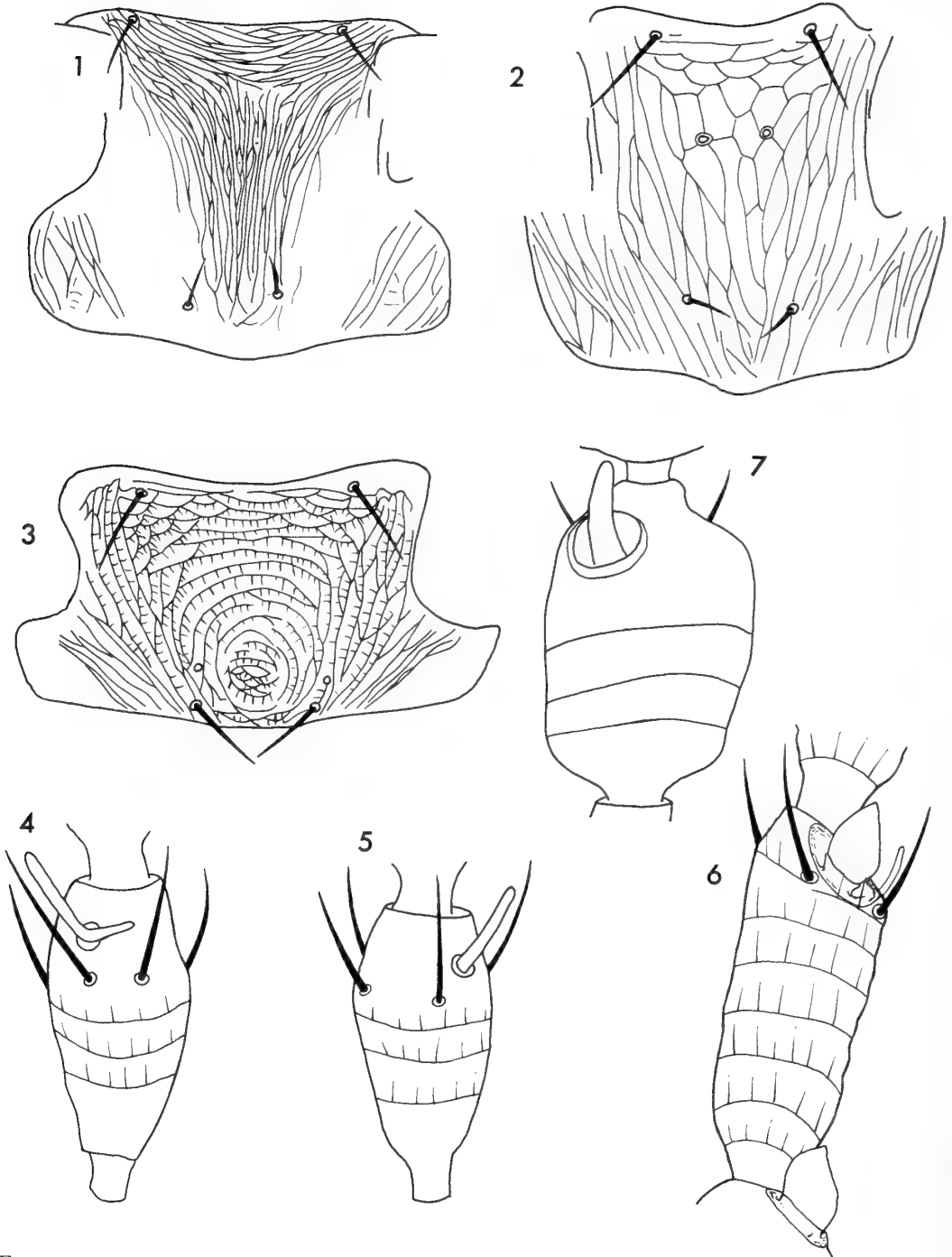
#### *Allelothrips cameroni* (Bagnall)

*Pseudaeolothrips cameroni* Bagnall, 1932c : 290–291.

*Allelothrips cameroni* (Bagnall) Stannard, 1961 : 9.

Bagnall refers to one female from Wad Medani and several females from Merebea. Only the Wad Medani specimen, labelled as 'Type' remains in the Collection.

Holotype ♀. SUDAN : Wad Medani.



FIGS. 1-7. Figs. 1-3. Metanotum: 1, *Allelothrips tenuicornis*. 2, *Rhipidothripiella turneri*. 3, *Holarthrothrips tenuicornis*. Figs. 4-6. Antennal segment III: 4 & 5, *Anaphothrips debilis*, left and right antenna of one female. 6, *Holarthrothrips tenuicornis*. Fig. 7. Antennal IV of *Australothrips bicolor*.

***Allelothrips cincticornis* Bagnall**

*Allelothrips cincticornis* Bagnall, 1932c : 289.

Only one female remains in Bagnall's collection but a specimen was collected by the present author on *Ricinus* at the type locality on 3.x.1963.

Holotype ♀. SUDAN : Wad Medani, on Naal grass in Insectory, 26.ix.1929 (*W. P. L. Cameron*).

***Allelothrips tenuicornis* (Bagnall)**

(Text-fig. 1)

*Arhipidothrips tenuicornis* Bagnall, 1932c : 293-294.

*Allelothrips tenuicornis* (Bagnall) Stannard 1961 : 9.

The present author collected six females, one male and several larvae of this species on grass and groundnuts at various places in Wad Medani, Sudan, in October 1963. In life the species is very active and moves about on plants with the antennae waving like a small Hymenopteron.

LECTOTYPE ♀. SUDAN : Blue Nile Province, Darwish, in 'dura' (*Sorghum*) field, 1.ix.1931, (*W. P. L. Cameron*).

***Andrewarthaia kellyana* (Bagnall)**

*Rhipidothrips kellyanus* Bagnall, 1924f : 584-585.

*Andrewarthaia kellyana* (Bagnall) Mound, 1967b : 47-51.

This is apparently a common Australian species on *Eucalyptus*. The genus is close to *Desmothrips* but there is a pair of stout setae near the posterior angles of the pronotum.

LECTOTYPE ♀. SOUTH AUSTRALIA : Mount Lofty Ranges, *Eucalyptus leucoxyton*, 22.iv.1923 (*R. Kelly*).

**CORYNOTHRIPOIDES Bagnall**

*Corynothripoides* Bagnall, 1926a : 170. Type-species *C. marginipennis*, by monotypy.

***Corynothripoides marginipennis* Bagnall**

*Corynothripoides marginipennis* Bagnall, 1926a : 171-172.

This remarkable species is apparently only known from a single specimen. The head is produced conically in front of the eyes and there are only two ocelli. The first vein of the fore wing is closely associated with the costa, the costal setae are rather long, and the submedian part of the wing has very reduced microtrichia reminiscent of *Allelothrips*.

Holotype ♀. SIERRA LEONE : Taninahun, 6.ii.1925 (*E. Hargreaves*).

**CRANOTHRIPS** Bagnall

*Cranothrips* Bagnall, 1915a : 315. Type-species *Cranothrips poultoni*, by monotypy.  
*Cranothrips* Bagnall ; Mound, 1967b : 53.

***Cranothrips poultoni*** Bagnall

*Cranothrips poultoni* Bagnall, 1915a : 316.  
*Cranothrips poultoni* Bagnall ; Mound, 1967b : 53-54.

This differs from *Ankothrips* species in having the first, not the second, antennal segment produced at its inner margin into a serrate lobe, and in lacking a stout inter-antennal projection bearing the ante-ocular setae. The metanotal sculpture consists of a series of arcuate lines concentric about the anterior midpoint of the metanotum.

LECTOTYPE ♀. WESTERN AUSTRALIA : Nr. Fremantle, on flowers, viii.1914 (*E. B. Poulton* No. 17).

**DESMOTHRIPS** Hood

*Desmothrips* Hood, 1915a : 57. Type-species *Orothrips australis* Bagnall, by monotypy.  
*Archaeolothrips* Bagnall, 1924k : 627. Type-species *A. fontis*, by monotypy.  
*Desmothrips* Hood ; Mound, 1967b : 54-56.

Bagnall concluded from a study of the number of maxillary palp segments that *Archaeolothrips*, based on a single male, was related to *Aeolothrips*, and that *Desmothrips* was related to *Orothrips*. However in *Orothrips* species all the antennal segments are distinctly separate and the genus is apparently related to *Melanthrips*. All *Desmothrips* species are from Australia.

***Desmothrips australis*** (Bagnall)

*Orothrips australis* Bagnall, 1914c : 287.  
*Archaeolothrips fontis* Bagnall, 1924k : 627-628.  
*Desmothrips australis* (Bagnall) ; Mound, 1967b : 57-60.

Holotype ♀. AUSTRALIA : Victoria, Healesville, *Xanthorrhoea australis*, 12.x.1913 (*A. E. Shaw*).

Holotype ♂ of *fontis*. AUSTRALIA : Victoria, Healesville, *Erythraea australis*, 21.xii.1913 (*A. E. Shaw* & *R. Kelly*).

***Desmothrips obsoletus*** Bagnall

*Desmothrips obsoletus* Bagnall, 1924k : 626-627.  
*Desmothrips obsoletus* Bagnall ; Mound, 1967b : 63.

The unique holotype lacks accessory setae on sternites V and VI, and this is unusual in species related to *Desmothrips*.

Holotype ♀. AUSTRALIA : Victoria, Melbourne, Brighton Beach, *Mesembryanthemum* growing in sand, 8.xii.1923 (*R. Kelly*).



***Desmothrips propinquus* (Bagnall)**

*Orothrips propinquus* Bagnall, 1916b : 397.

*Desmothrips propinquus* (Bagnall) ; Mound, 1967b : 65-66.

From *australis* this species can be distinguished by the dark costa around the distal pale area of the fore wing.

LECTOTYPE ♀. AUSTRALIA : Victoria, Creswick, on Sweet Pea, 17.i.1915 (R. Kelly).

***Desmothrips tenuicornis* (Bagnall)**

*Orothrips tenuicornis* Bagnall, 1916b : 397-398.

*Desmothrips tenuicornis* (Bagnall) ; Mound, 1967b : 68-70.

Although Bagnall refers to three females in the original description of this species only one remains in the collection, labelled 'Type'. In spite of the long, clear yellow third antennal segment, *tenuicornis* is very closely related to *australis*.

Holotype ♀. AUSTRALIA : Victoria, Healesville, *Erythraea australis*, 21.xii.1913 (A. E. Shaw & R. Kelly).

***Franklinothrips tenuicornis* Hood**

*Franklinothrips tenuicornis* Hood, 1915b : 164-165. (April).

*Mitothrips petulans* Bagnall, 1915d : 496-498. (September).

*Franklinothrips tenuicornis* Hood ; Stannard, 1952 : 14-23.

Holotype ♀ of *petulans*. TRINIDAD : Sangre Grande, vii.1913.

***Melanthrips ficalbii* Buffa**

*Melanothrips* [*sic*] *ficalbii* Buffa, 1907 : 61.

*Melanothrips* [*sic*] *angusticeps* Bagnall, 1924a : 10-11.

Bagnall considered that *angusticeps* differed from *ficalbii* in having the head as long as broad instead of strongly transverse.

LECTOTYPE ♀ of *angusticeps*. ENGLAND : Berks., Cholsey, in yellow flower, ? *Potentilla*, vi.1913 (R.S.B.).

***Melanthrips fuscus* (Sulzer)**

*Thrips fuscus* Sulzer, 1776 : 113.

*Melanothrips* [*sic*] *harrisoni* Bagnall, 1930a : 48-49.

*Melanothrips* [*sic*] *bisetosus* Bagnall, 1934e : 485-486.

*Melanthrips fuscus* (Sulzer) ; Speyer & Parr, 1950 : 37-39.

Bagnall described *harrisoni* from a single deformed immature female, and the two subapical external setae on the hind tibiae of *bisetosus* are variable in development.

Holotype ♀ of *harrisoni*. ENGLAND : Sandhurst, ? grass, vi.1929.

Paratypes ♂ & ♀♀ of *bisetosus*. FRANCE : Dercy, *Pisum sativum*, 18.vii.1913 (L. Bru).

***Melanthrips nigricornis* Bagnall**

*Melanothrips* [*sic*] *nigricornis* Bagnall, 1913h : 263-264.

*Melanothrips* [*sic*] *thymicola* Bagnall, 1934e : 486-487. **Syn. n.**

*Melanthrips nigricornis* Bagnall ; Titschack, 1960 : 29.

This species belongs to the group of *Melanthrips* which have no cilia on the costal margin of the fore wing between the bases of the two cross veins. The wing is not lighter at the base as it is in *fuscus*. *M. pallidior* Priesner is closely related and may prove to be a smaller and more common form of this species. Bagnall described *thymicola* from two male and two female specimens, all mounted under one cover-glass and in poor condition. These were said to differ from *nigricornis* in possessing a long subapical hair on the hind tibiae. However this hair is present, although not so elongate, in the paratypes of *nigricornis*.

LECTOTYPE ♀. N.E. TUNISIA : Djebel Achkel, on *Convolvulus tricolor*, 27.iii.1913 (P. A. Buxton).

Syntypes of *thymicola*. FRANCE : Alpes Maritimes, Cap-Ferrat, on *Thymus vulgare*, 25.ii.1913.

**MYMAROTHRIPS Bagnall**

*Mymarothrips* Bagnall, 1928a : 306. Type-species *M. ritchianus*, by monotypy.

Bagnall erected a new family and superfamily of Thysanoptera for this genus, although these groups are no longer used. The wings are narrowed basally and greatly expanded subapically. The microtrichia of the submedian part of the wing are very reduced and the costal setae are long. The antennal segments are short and broad, almost quadrate, with numerous setae, and the maxillary palps are multi-segmented. The genus is probably derived from *Allelothrips* like Aeolothripids, in which group the antennal structure is highly variable between species and the maxillary palps are often much divided.

***Mymarothrips ritchianus* Bagnall**

*Mymarothrips ritchianus* Bagnall, 1928a : 306-307.

Holotype ♀. TANGANYIKA : Rubunge, on *Coffea arabica*, 21.ix.1926 (A. H. Ritchie 526).

**RHIPIDOTHRIPIELLA Bagnall**

*Rhipidothripiella* Bagnall, 1932c : 292-293. Type-species *Rhipidothrips turneri* Moulton, 1930a : 197-198, by monotypy.

The single species for which this genus was erected is more closely related to *Allelothrips* than to *Rhipidothrips*. However the fore wings are not as Bagnall stated 'as in *Allelothrips*', although the costal setae are well developed the wing is

barely constricted toward the base. The metanotal sculpture (Text-fig. 2) of *turneri* is quite different from that of *Allelothrips* species. The holotype of *turneri* is in the British Museum and the collection data are SOUTH AFRICA : Orange Free State, Harrismith, iii.1927 (*R. E. Turner*).

### *Rhipidothrips gratiosus* Uzel

*Rhipidothrips gratiosus* Uzel, 1895 : 66-68.

*Rhipidothrips uzelianus* Bagnall, 1934e : 482.

*Rhipidothrips gratiosus* Uzel ; Bailey, 1954 : 218.

*R. uzelianus* is now recognized as a small form of *gratiosus*.

Holotype ♀ of *uzelianus*. SWITZERLAND : Zurich, Uteliberg, on *Brachypodium*, vii.1925 (*R.S.B.*).

## HETEROTHIRIPIDAE

### *HOLARTHROTHRIPS* Bagnall

*Holarthrothrips* Bagnall, 1927b : 562-563. Type-species *H. tenuicornis*, by monotypy.

Bagnall proposed a new family, Opadothripidae, to include this genus and the fossil genus *Opadothrips* Priesner. This family name is not used at present.

### *Holarthrothrips tenuicornis* Bagnall

(Text-figs. 3 & 6)

*Holarthrothrips tenuicornis* Bagnall, 1927b : 563-564.

Although the sensoria on antennals III and IV are similar to those of *Oligothrips oreios* Moulton, the two genera differ in the chaetotaxy of the head and pronotum as well as in the sculpture of the metanotum.

Holotype ♀. FRANCE : St. Cyr-sur-Mer, on Grape, ix.1927 (*R.S.B.*).

## THRIPIDAE

### *Anaphothrips badius* (Williams)

*Euthrips badius* Williams, 1913 : 221-224.

*Anaphothrips badius* Williams var. *pectens* Bagnall, 1923b : 57.

Bagnall indicated that one of his specimens had finer microtrichia on the eighth tergite than the type of *badius*. There is no significant difference between the forms.

Holotype ♀ of *pectens*. ENGLAND : Oxford, Weston-on-the-Green (*R.S.B.*).

***Anaphothrips cameroni*** (Bagnall)

*Euthrips cameroni* Bagnall, 1919 : 271-272.

As indicated in the original description, this species is close to *obscurus* (Müll.), from which it differs in the darker colour and the long, even comb on tergite eight. The male has similar appendages to *obscurus* on tergite nine.

Holotype ♀. CANADA : Saskatchewan, Semans, in injured wheat stems, 4.viii.1917 (*A. E. Cameron*).

***Anaphothrips gracillimus*** Priesner

(Text-figs. 4 & 5)

*Anaphothrips gracillimus* Priesner, 1923b : 82-83.

*Anaphothrips debilis* Bagnall, 1927a : 568-569. **Syn. n.**

*Anaphothrips johni* Bagnall, 1933c : 653. **Syn. n.**

*A. debilis* was distinguished from *gracillimus* by its small size and the darker colour of antennal II, and *A. johni* was stated to be intermediate between these two species. Both *debilis* and *johni* are here regarded as small forms of *gracillimus*, since they do not differ from that species in the form of cuticular sculpture, nor the arrangement of setae. The trichomes of antennal III may be simple, forked, or partially forked with the forks unequally developed (Text-figs. 4 & 5).

LECTOTYPE ♀ (microptera) of *debilis*. FRANCE : L'Almanarre, nr. Hyères, on *Juncus* at edge of salt marsh, ii.1927 (*R.S.B.*).

LECTOTYPE ♀ (microptera) of *johni*. FRANCE : nr. Plage d'Hyères, on Grass, edge of the Salins, ix.1927 (*R.S.B.*).

***Anaphothrips obscurus*** (Müller)

*Thrips obscura* Müller, 1776 : 96.

*Anaphothrips obscurus* (Müller) ; Priesner, 1926 : 183-187.

*Anaphothrips discrepans* Bagnall, 1933c : 651-652.

Bagnall described *discrepans* as a 'small and slender edition of *obscurus*' and it does not appear to differ from that species in any fundamental way.

LECTOTYPE ♀ of *discrepans*. FRANCE : Arcachon, Mouth of the Teste, on *Juncus*, viii.1926 (*R.S.B.*).

***Anaphothrips orchidaceus*** Bagnall

*Anaphothrips orchidaceus* Bagnall, 1909a : 33-34.

*Anaphothrips orchidaceus* ssp. *orchidaceus* Bagnall ; Sakimura, 1967 : 89-94.

This is a very distinctive species with long brown antennae, found occasionally as a pest in greenhouses.

Lectotype ♀. ENGLAND : Northumberland, Wylam-on-Tyne, on *Odontoglossum crispum*, viii.1907 (*R.S.B.*).

*Anaphothrips sudanensis* Trybom

*Anaphothrips sudanensis* Trybom, 1911 : 1-4.

*Euthrips flavicinctus* Karny, 1912b : 115-117. **Syn. n.**

*Euthrips (Anaphothrips) alternans* Bagnall, 1913f : 291-292. **Syn. n.**

*Euthrips citricinctus* Bagnall, 1919 : 270-271.

*Anaphothrips bicolor* Morgan, 1925 : 4-5. **Syn. n.**

*Anaphothrips transvaalensis* Faure, 1925 : 150-153. **Syn. n.**

In the original description Trybom states that this species has simple sense cones on antennals III and IV. The two syntypes, still in alcohol, have been borrowed recently from the Riksmuseum Stockholm and mounted in balsam. The coloration has faded seriously, but forked sense cones are clearly visible on the antennal segments. Type specimens of *bicolor*, *flavicinctus* and *transvaalensis* have been studied. The species can be recognized, not only from its coloration, but also by the sculpture of the metanotum and abdominal tergites, the small median setae of the tergites, and the stout teeth of the eighth tergal comb. The pronotum, abdominal segment five and antennal V. are all quite variable in colour, from clear yellow to light brown. The adults and larvae live within the leaf sheaths of many Gramineae and cause reddish brown longitudinal markings on the expanded leaves, not unlike rust fungi.

LECTOTYPE ♀. SUDAN : South of Kaka, inner halb Grasscheiden, 7.ii.1901 (*I. Trägårdh*). Riksmuseum Stockholm.

LECTOTYPE ♀ of *flavicinctus*. JAVA : Salatiga, Blattgallen von *Homalomena* sp., 17.v.1909 (*Docters v. Leeuwen*). H. Priesner Collection.

LECTOTYPE ♀ of *alternans*. EGYPT : Bahteem, nr. Cairo, on Maize, 1.v.1911 (*F. C. Willcocks*).

Holotype ♀ of *citricinctus*. INDIA : N. Malabar, on Arrowroot leaves, ix.1918 (*Ramakrishna*).

*Anaphothrips tamaricis* Bagnall

*Anaphothrips tamaricis* Bagnall, 1926e : 645-646.

*Oxythrips navasi* Bagnall, 1926e : 648-649.

*Anaphothrips (Tamaricothrips) tamaricis* Bagnall; Priesner, 1964 : 49.

This species can be separated from *Oxythrips* species by the presence of a comb on the eighth tergite. The tergal pores are not very close to the hind margins and the median part of the tergites is without sculpture, whereas in *Oxythrips* species the pores are separated from the hind margins only by a distance about equal to their diameter and the median part of the tergites bears several transverse lines of sculpture.

LECTOTYPE ♀. FRANCE : Perpignan, Canet-le-Plage, *Tamarix gallica*, viii.1926 (*R.S.B.*).

LECTOTYPE ♀ of *navasi*. SPAIN : [Saragossa, viii.1913 (*L. Navás*)].

***Anaphothrips tamicola*** (Bagnall)

*Euthrips tamicola* Bagnall, 1914e : 273-274.

This species is apparently common on its host plant, *Tamus communis*, in Western Europe. The body is dark brown, with the tarsi, tibiae and antennals III and IV yellow. The tenth abdominal segment of the pink larvae has a pair of horns (modified setae) at the apex similar to those found in *silvarum* Priesner and the species of *Oxythrips*.

LECTOTYPE ♀. ENGLAND : Oxford, Yarnton, in flowers of *Tamus communis*, vi.1914 (R.S.B.).

***Anaphothrips vitalbae*** Bagnall

*Anaphothrips vitalbae* Bagnall, 1926e : 644-645.

The antennae of this species, with numerous rings of microtrichia, are very similar to *betae* Uzel. Also the sculpture of the two species, particularly on the thorax, shows some similarities. The genus *Dictyothrips*, defined by Uzel for the single species *betae*, is regarded by the present author as a synonym of *Anaphothrips*.

LECTOTYPE ♀. ITALY : S. Vito (Modena), on *Vitalba*, 9.vii.1917 (C. Minozzi).

**APTEROTHrips** Bagnall

*Apterothrips* Bagnall, 1908c : 185. Type-species *A. subreticulata*, by monotypy.

*Apterothrips* Bagnall ; Priesner, 1964 : 53.

This genus is commonly regarded as a synonym of *Anaphothrips*, although Bagnall compared the type-species to *subapterus* Haliday, which is now placed in *Tmetothrips*.

***Apterothrips secticornis*** (Trybom)

*Thrips secticornis* Trybom, 1896 : 620-622.

*Apterothrips subreticulata* Bagnall, 1908c : 185-186.

*Apterothrips secticornis* (Trybom) ; Priesner, 1964 : 53.

This species is widespread on grasses, according to Priesner, in North Europe and northern parts of America. The present author has seen specimens from the Falkland Islands.

LECTOTYPE ♀ of *subreticulata*. CANADA : Queen Charlotte Island, Masset, B.M. 1900-102.

**APTINOTHrips** Haliday

*Aptinothrips* Haliday, 1836 : 445. Type-species *Thrips rufa* Gmelin, by monotypy.

*Uzeliella* Bagnall, 1908a : 5. Type-species *U. lubbocki*, by monotypy.

*Aptinothrips rufus* (Gmelin)

*Thrips rufa* Gmelin, 1790 : 2224.

*Uzeliella lubbocki* Bagnall, 1908a : 5-6.

Bagnall described his species from a single female collected on sea-weed at Whitley Bay, Northumberland, x.1906.

*Asprothrips indicus* (Bagnall) **comb. nov.**

(Text-figs. 9 & 10)

*Dendrothrips indicus* Bagnall, 1919 : 261.

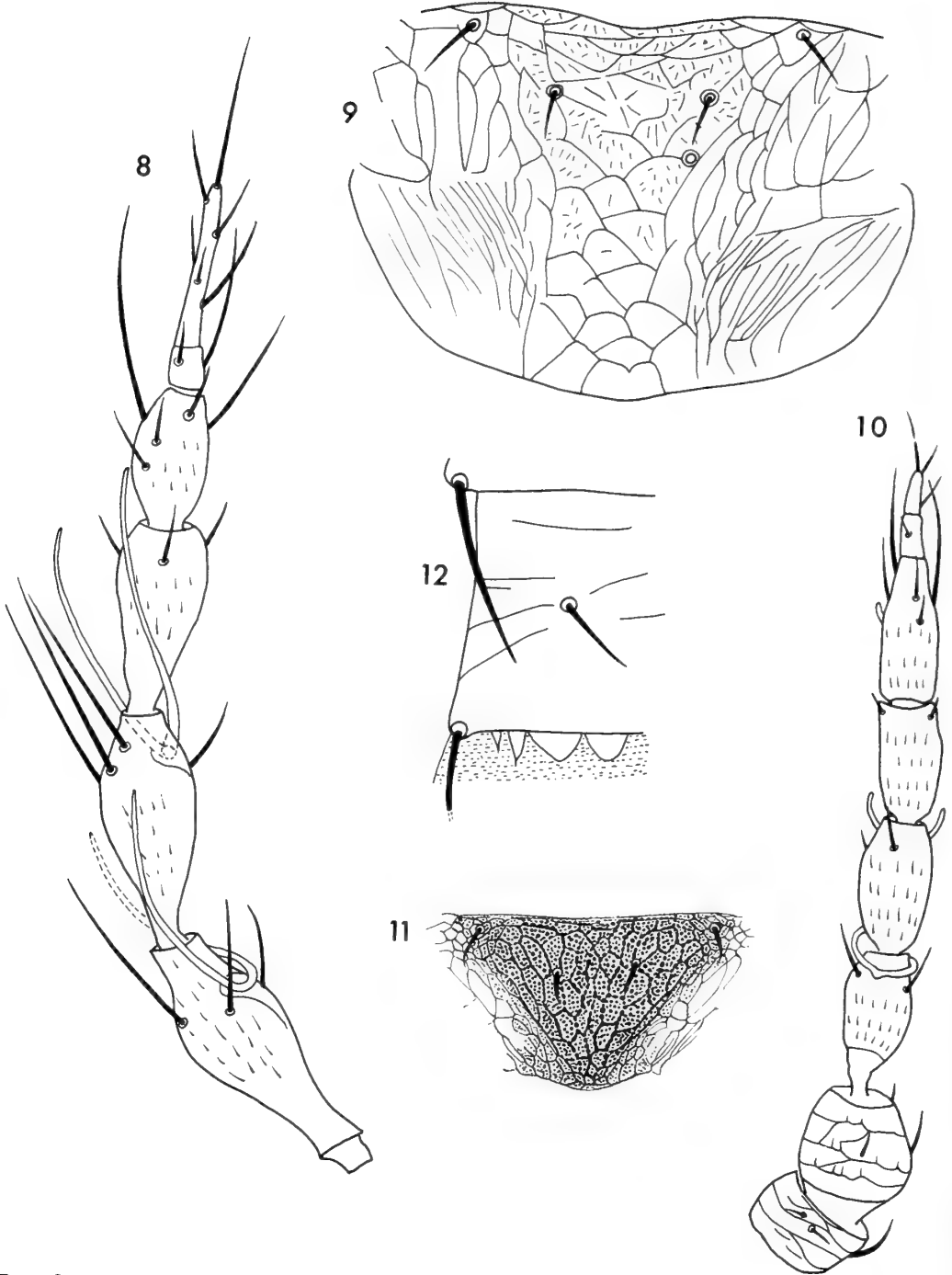
Although described as being 'very near to *Dendrothrips sexmaculatus*', the species *indicus* must be removed from *Dendrothrips* on account of the wing structure and body chaetotaxy. The cilia arise close to the anterior margin of the fore wing, not as in *Dendrothrips* at some distance from the margin, and moreover they form a continuous row to the wing apex. The wing apex bears two stout setae and the cilia of the hind margin are wavy, not straight. The median setae of the abdominal tergites are not longer than the distance between them, and the marginal setae on the ninth tergite are much shorter than the tenth segment in the female. In these characters *indicus* resembles *antennatus* Moulton, the type-species of *Asprothrips*. They differ, however, in the sculpture of the cuticle, and the structure of the hind tarsi. In *indicus* only the first two pairs of legs have two-segmented tarsi, whereas in *antennatus* all the tarsi are two-segmented. The following description is based on two females and two males, and these have been compared with four females from the type series of *Asprothrips rauli* Crawford, a junior synonym of *antennatus* Moulton.

**FEMALE** : BROWN, all tarsi yellow. Antennal II brown, I and VI to VIII light-brown, III to V yellow. Fore wing pale with second quarter dark brown and a pale brown subapical band, posterior marginal cilia dark.

Head broad, eyes occupy about two-thirds of head length ; dorsal surface sculptured ; setae minute  $3\mu$  long ; one pair of ocellar setae on anterolateral sides of ocellar triangle, one pair lateral to first ocellus close to compound eyes ; three pairs of postocular setae, the median pair close to posterior ocelli. Mouth-cone short, maxillary palpi three-segmented. Antennae eight-segmented, II large and globular, III small and constricted at base, V and VI broadly united ; trichomes on III and IV broadly U-shaped.

Pronotum with transversely anastomosing sculpture, some of the elongate reticulations with internal markings. Setae small, anterior margin with three pairs, posterior margin with four or five pairs about  $8\mu$  long, disc with about six pairs about  $3\mu$  long. Metanotum with two pairs of minute setae, internal thoracic skeleton typically Dendrothripid as in *Asprothrips rauli*. Fore and mid tarsi two-segmented, hind tarsi undivided. Setae of fore wing on costa and also first and second veins minute, more slender than the microtrichia of the pigmented areas. Wing apex with two stout setae, posterior fringe wavy.

Abdominal tergites with a median groove, laterally with strong transverse sculpture. Median paired setae minute, about  $5\mu$ , submedian paired setae close to the tergite pore. Tergites two to nine with one pair of small posterior marginal setae ; eighth tergite without a comb. Sternites with three pairs of small marginal setae.



FIGS. 8-12. Fig. 8. *Euhydatothrips nigripennis*, right antenna. Figs. 9 & 10. *Asprothrips indicus*: 9, Metanotum. 10, Left antenna of male. Fig. 11. *Dendrothrips jeanneli*, metanotum. Fig. 12. *Bregmatothrips ramakrishnae*, left margin of tergite VII of female paratype.



MALE : Colour paler than in female. Sculpture and chaetotaxy very similar to female, tergites IX and X almost identical in the two sexes. Sternites III to VIII with a small circular glandular area, sternal marginal setae longer than in the female.

Measurements (in  $\mu$ ) of Lectotype ♀ : Body length 750 ; wing length 500 ; head length 130, breadth 80 ; antennal segments III to VIII length 31, 31, 29, 34, 8, 11 ; tergite IX marginal seta 8 ; hind tibia 115.

LECTOTYPE ♀. [INDIA : Malabar, on Arrow root leaves, ix.1918 (*Ramakrishna*)], Reg. 337.

***Astrothrips roboris* (Bagnall) comb. n.**

*Tryphactothrips roboris* Bagnall, 1919 : 257-258.

*Astrothrips* (*Gamothrips*) *connaticornis* Priesner, 1965 : 214-216. **Syn. n.**

The unique holotype of this species lacks antennae, but the present author has examined both males and females from Southern Nigeria, along with an undescribed member of the genus. *A. pentatoma* Hood is probably a synonym.

Holotype ♀. [GHANA : Aburi, *Thunbergia laurifolia*, 11.xi.1915 (*W. H. Patterson*)], Reg. 281.

Syntypes ♂ & ♀♀ of *connaticornis*. SUDAN : Wad Medani, on climbing plant, i.1931 (*W. P. L. Cameron*).

**AUSTRALOTHRIPS** Bagnall

*Australothrips* Bagnall, 1916a : 214-215. Type-species *A. bicolor*, by monotypy.

***Australothrips bicolor* Bagnall**

(Text-fig. 7)

*Australothrips bicolor* Bagnall, 1916a : 215.

In the extreme reduction of the wing setae and the presence of simple sense cones on the antennae, this species appears to be related to *Rhipiphorothrips cruentatus* Hood. However, in the latter genus the costal setae are quite absent, the first vein of the fore wing is complete and bears very reduced setae, and the second vein is fused to the hind margin. In *Australothrips bicolor* the costal setae are present, although no longer than the tubercles upon which each is set, the first vein is fused to the costa, and the second vein free along the length of the wing as in *Dinurothrips*. The sense cones of antennals III and IV in *bicolor* are set in cup-shaped depressions.

Adults and larvae of this species have recently been received from *Eucalyptus obliqua*, Belair National Park, South Australia. The published type locality is Healesville, but this is not entered on the syntype slides.

Syntypes (5♀, 3♂ on four slides). AUSTRALIA : Victoria, [Healesville], *Eucalyptus viminalis* (*R. Kelly* 107).

**BALIOTHRIPS** Uzel

*Baliothrips* Uzel, 1895 : 204–205. Type-species *Thrips dispar* Haliday, by monotypy.

*Euchaetothrips* Bagnall, 1916b : 402. Type-species *Thrips kroeli* Schille, 1911. **Syn. n.**

*Stenchaetothrips* Bagnall, 1926c : 107. Type-species *Stenchaetothrips melanurus*, by monotypy.

**Syn. n.**

Bagnall indicated that the genus *Euchaetothrips*, which he erected for *kroeli* Schille, was 'nearest *Thrips* (*Bagnallia* group)'. *Bagnallia*, as used by Bagnall, is synonymous with *Baliothrips*, *Stenchaetothrips* was based on two damaged females, and in the opinion of the present author *biformis*, *dispar*, *kroeli*, *melanurus* and *vittipennis* should be regarded as congeneric. These five species differ from *Thrips* species in the arrangement of the postocular setae. If these setae are numbered from the median pair outwards, then pair two is always displaced to the posterior of pairs one, three and four. These postocular setae are well separated from the eye, the cheeks rather long and straight, and the head broadest across the eyes. The fifth antennal segment is broad at the apex and the metanotum is striate. The species may be separated as follows:—

KEY TO *BALIOTHRIPS* SPECIES

- |   |   |                            |
|---|---|----------------------------|
| 1 | Anterior border of pronotum with two pairs of setae, the median pair rather elongate ;<br>maxillary palpi three-segmented . . . . .   | <b>kroeli</b> Schille      |
| – | Anterior border of pronotum with four or more pairs of setae—if one pair is elongate,<br>then these arise just behind the anterior border ; palpi two- or three-segmented . . . . . | 2                          |
| 2 | One pair of submarginal setae near anterior border of pronotum rather longer than the<br>the other marginal setae . . . . .   | 3                          |
| – | Setae on anterior border of pronotum of equal length, all arising at the margin ;<br>microtrichia of eighth tergal comb simple, each base bears a single apex . . . . .             | 4                          |
| 3 | Microtrichia of comb on eighth tergite compound, several apices arise from each base ;<br>maxillary palpi two-segmented ; body dark . . . . .                                       | <b>dispar</b> Haliday      |
| – | Comb absent from eighth tergite ; maxillary palpi three-segmented ; body pale,<br>abdominal segments IX and X dark . . . . .  | <b>melanurus</b> Bagnall   |
| 4 | Pronotal disc without setae . . . . .   | <b>vittipennis</b> Bagnall |
| – | Pronotal disc with three or more pairs of setae ; maxillary palpi three-segmented<br>. . . . .  | <b>biformis</b> Bagnall    |

***Baliothrips biformis*** (Bagnall)

*Bagnallia biformis* Bagnall, 1913k : 237–238.

*Bagnallia biformis* var. *adusta* Bagnall, 1913k : 238.

*Bagnallia biformis* var. *melanurus* Bagnall, 1913k : 238.

*Thrips biformis* (Bagnall) ; Priesner, 1964 : 95.

*Baliothrips biformis* (Bagnall) ; Mound, 1967a : 16.

The specimen labelled '*biformis* v. *adusta* ♀ Type' and one female and three males labelled '*biformis* Cotypes' have been ruined, due to the mountant turning black and the insect body decomposing. The only other material available from the original series is a male and female mounted by C. B. Williams, and it is this female which is here selected as Lectotype.

LECTOTYPE ♀. ENGLAND : Oxford, Weston-on-the-Green, on sedge, 13.viii. 1913 (R.S.B.).

***Baliothrips dispar* (Haliday)**

*Thrips dispar* Haliday, 1936 : 449.

*Bagnallia agnessae* Bagnall, 1911b : 7-8.

*Bagnallia halidayi* Bagnall, 1911b : 8-9.

*Baliothrips dispar* (Haliday) ; Bagnall, 1914c : 297.

*Baliothrips exilis* Bagnall, 1928e : 154-155.

In 1914, Bagnall acknowledged the fact that his species *agnessae*, based on females, and *halidayi*, based on four males, were synonymous with *dispar*. The two specimens later described as *exilis* are small females of *dispar*.

Syntypes ♀ of *agnessae*. ENGLAND : County Durham, Gibside, on grasses, x.1910.

LECTOTYPE ♀ of *exilis*. [ENGLAND : Manchester, Burnage Lane, on *Holcus lanatus*, 19.viii.1925 (*H. Britten*)].

LECTOTYPE ♀ of *halidayi*. ENGLAND : Epping Forest, on grasses, ix.1910.

***Baliothrips melanurus* (Bagnall) comb. n.**

*Stenchaetothrips melanurus* Bagnall, 1926c : 108.

This species was considered by Bagnall to be related to '*Anaphothrips*, *Bregmatothrips* and *Oxythrips*'. The ocellar and postocular chaetotaxy is similar to the other *Baliothrips* species and the metanotum is striate as in *biformis*. The tergites are devoid of sculpture medially and there is no comb on the eighth tergite. The pale colour with dark abdominal apex is quite distinctive. The present author has examined one female apparently of this species trapped in Mokwa, Northern Nigeria.

Syntypes ♀. SUDAN : Khartoum, on Green Tura (? *Sorghum*) 23.viii.1910 (*King*).

***Baliothrips vittipennis* Bagnall**

*Baliothrips vittipennis* Bagnall, 1927b : 574-575.

Although probably closely related to *dispar*, the holotype of *vittipennis* lacks a long pair of setae near the anterior margin of the pronotum, and the eighth tergal comb is regular. The maxillary palpi are not visible in the only available specimen.

Holotype ♀. FRANCE : l'Estaque near Marseille, on grasses near sea, ix.1927 (*R.S.B.*).

***Bandamia melanophthalma* (Bagnall)**

*Aptinothrips melanophthalmus* Bagnall, 1927b : 567-568.

*Aptinothrips melanophthalmus* Bagnall ; Speyer, 1935 : 498-500.

*Bandamia melanophthalma* (Bagnall) zur Strassen, 1956 : 16-19.

Bagnall described this species from a single female, and zur Strassen having found the species in the Canary Islands has recently redescribed it as the type of a new monotypic genus. It is apparently a grass-living species.

Holotype ♀. FRANCE : l'Estaque near Marseille, on a crucifer, ix.1927 (*R.S.B.*).

### **BRACHYUROTHRIPS** Bagnall

*Brachyurothrips* Bagnall, 1921b : 265. Type-species *B. anomalus*, by monotypy.

*Brachyurothrips* Bagnall ; Bagnall, 1929d : 69.

*Brachyurothrips* Bagnall ; Costa Lima, 1956 : 559-563.

Costa Lima has suggested from a consideration of the descriptions, that this genus is identical with *Xestothrips* Priesner. However, *Brachyurothrips* is clearly different from both *Selenothrips* and *Xestothrips* in having only one pair of ocellar setae, simple trichomes on antennals III and IV, only one seta on the second vein of the fore wing, and few setae on the pronotum.

### ***Brachyurothrips anomalus*** Bagnall

*Brachyurothrips anomalus* Bagnall, 1921b : 265-266.

*Brachyurothrips hargreavesi* Bagnall, 1929d : 70-71. **Syn. n.**

*Brachyurothrips walteri* Costa Lima, 1956 : 560-562. **Syn. n.**

The description of *anomalus* was based on a single damaged female from which the antennae are missing. Although *hargreavesi* was described from several females, no attempt was made to compare the two species, and it is clear that Bagnall was in some doubt as to the validity of the second name. No difference can be found between the two forms and they are here regarded as synonymous. The type specimen of *walteri* from Bahia has not been examined, but the author has seen one female collected by G. Bondar on leaves of Malvaceae, 17.iii.1926, at Bahia, Brazil, which is *anomalus*. The description of *walteri* does not indicate any differences from the type of the genus. In addition to the characters given under the genus above, *anomalus* is remarkable in the very long costal setae, the long microtrichia of the wing, and the microtrichia on the median part of each tergite, particularly the eighth just anterior to the comb.

Holotype ♀. SEYCHELLES : Mahé, 1908-1909. No. 97.

Syntypes 6 ♀ of *hargreavesi*. SIERRA LEONE : Njala, on *Acalypha*, 8.viii.1926 (*E. Hargreaves* No. 240).

### ***Bregmatothrips ramakrishnae*** Bagnall

(Text-fig. 12)

*Bregmatothrips ramakrishnae* Bagnall, 1923c : 625-626.

*Neolimothrips saccharivora* Shumsher ; Ananthakrishnan 1966 : 30-31.

*Neolimothrips* is here regarded as being synonymous with *Bregmatothrips* in view of the close similarity of the setal arrangement of the head and pronotum, and the

position of the setae and pori on the abdominal tergites. The weakly sclerotized posterior marginal fringe of the abdominal tergites is distinctly scalloped in *venustus*, the type of *Bregmatothrips*, weakly scalloped in *ramakrishnae*, and slightly indented in *brachycephalus*, the type of *Neolimothrips*. Similarly, the presence of a septum in the elongate distal segment of the maxillary palps in *venustus*, which is apparently not developed in *brachycephalus*, is a matter of degree rather than a basic difference. In addition to the characters given by Ananthakrishnan, these two Indian species can be recognized by the differences in sculpture on the metanotum.

LECTOTYPE ♀. [INDIA : South Arcot, Palur, on Sugar Cane leaf tips, 29.x. 1918], Reg. 238.

### *Bregmatothrips saccharicola* Bagnall

*Bregmatothrips saccharicola* Bagnall, 1923c : 626-627.

This species is known from a single teneral female from which the antennae are missing. It differs from other *Bregmatothrips* species in having longitudinal striations on the metanotum, the median pair of postocular setae anterior to the submedian pair, and the abdominal tergites with sculpture extending across the median part of these sclerites. The first vein of the fore wing bears about nine setae distal to the junction of the first and second veins. The maxillary palpi are not visible, but there are three pairs of ocellar setae, pair three being on the anterior margins of the ocellar triangle and rather longer than the side of the triangle.

Holotype ♀. SUDAN : Khartoum, on green Sugar Cane, vii.1910 (*King*).

### *Caliothrips graminicola* (Bagnall & Cameron)

*Hercothrips graminicola* Bagnall & Cameron, 1932d : 417-418.

*Caliothrips graminicola* (Bagnall & Cameron) ; Faure, 1957 : 79-88.

This species is very close to *indicus* and is known from Sudan, Rhodesia and South Africa.

LECTOTYPE ♀. SUDAN : Wad Medani, Gezira Research Farm, on Naal grass, 18.ix.1930 (*W. P. L. Cameron*).

### *Caliothrips impurus* (Priesner)

*Heliothrips impurus* Priesner, 1927b : 61.

*Hercothrips fumipennis* Bagnall & Cameron, 1932d : 413-415.

*Caliothrips impurus* (Priesner) ; Faure, 1962 : 14.

Originally described from Southern Nigeria, this species is known from Gambia, Sudan, Eritrea and Rhodesia. It can be a serious pest of seedling cotton but may build up large populations on other plants, particularly *Arachis hypogaea*.

Syntypes of *fumipennis* ♀♀ ♂♂. SUDAN : Khartoum, Wellcome Trust Research Laboratories, on Cotton leaves, 2.x.1926 (*W. P. L. Cameron*).

***Caliothrips indicus*** (Bagnall)

*Heliothrips indicus* Bagnall, 1913f : 291-292.

*Caliothrips indicus* (Bagnall) ; Faure, 1962 : 12.

In this species the distal extremity of antennal V is barely lighter than the base of VI, whereas in the closely related African *graminicola* antennal V is much lighter than VI.

LECTOTYPE ♀. INDIA : Bengal, Sirsiah, on Indigo, 1908 (*Lefroy*).

***Caliothrips sudanensis*** (Bagnall & Cameron)

*Hercothrips sudanensis* Bagnall & Cameron, 1932d : 415-417.

*Caliothrips sudanensis* (Bagnall & Cameron) ; Faure, 1962 : 11.

The distribution and biology of this species in East Africa is apparently similar to *impurus*, however, *sudanensis* has not been recorded from West Africa.

Syntypes ♀♀ ♂♂. SUDAN : Khartoum, Wellcome Trust Research Laboratories, on Cotton, 1.ii.1927 (*W. P. L. Cameron*).

***Cestrothrips karnyi*** (Bagnall)

*Rhamphothrips karnyi* Bagnall, 1927b : 572-573.

*Cestrothrips karnyi* (Bagnall) ; Priesner, 1964 : 83-84.

The two females and single male available are too opaque to attempt a redescription of this unusual species. The prothorax, which is wider at the posterior than the anterior, recalls *Mycterothrips*, as does the small head and long mouth cone. Contrary to the descriptions the eighth tergal comb is well developed, long and fine as in *Mycterothrips* and the metathoracic furca appears to have a spinula. However, there are no traces of any microtrichia on the tergites which are so typical of *Mycterothrips*. The nine-segmented antennae and the absence of major pronotal setae may indicate some relationship with *Anaphothrips*.

LECTOTYPE ♀. FRANCE : Iles d'Hyères, Porquerolles, *Erica arborea*, ix.1927 (*R.S.B.*).

***Chaetanaphothrips signipennis*** (Bagnall)

*Scirtothrips signipennis* Bagnall, 1914b : 22-23.

*Chaetanaphothrips signipennis* (Bagnall) ; Stannard, 1956b : 175.

As Stannard has pointed out, this species differs from *orchidii* in having a pair of setae anterolateral to the first ocellus, a glandular area on the third sternite of the female, and the fifth seta from the mid-line on the hind margin of the pronotum less than half as long as the third.

Holotype ♀. CEYLON : Peradeniya, under leaf-sheath of banana, 16.vi.1913 (*A. Rutherford*).

***Chirothrips aculeatus* Bagnall**

*Chirothrips similis* of Priesner, 1926 : 142, nec Bagnall, 1909.

*Chirothrips aculeatus* Bagnall, 1927a : 567.

*Chirothrips angusticornis* Bagnall, 1932b : 186-187.

*Chirothrips aculaetus* Bagnall ; zur Strassen 1960 : 168.

Bagnall stated that *aculeatus* was 'readily separated from *similis* by the long pointed end of the abdomen', and indicated that the species had been fully described by Priesner on material from Austria and Hungary. No types were designated but one of the original specimens collected by Pillich in Hungary is here designated as lectotype. Some of the material referred to by Bagnall as *aculeatus* was later described by him as *angusticornis* on the grounds that these specimens were smaller and paler.

LECTOTYPE ♀. HUNGARIA : Simontornya, 'Weingarten Gramineen', 5.v. 1924 (*F. Pillich*).

LECTOTYPE ♀ of *angusticornis*. FRANCE : Gavarnie, on grass, no date (*Randall Cooke*).

***Chirothrips africanus* Priesner**

*Chirothrips africanus* Priesner, 1932a : 46-47.

*Chirothrips aethiops* Bagnall, 1932b : 184.

This species is closely related to *manicatus* Hal. and *pallidicornis* Pr. It may be recognized by the straight exterior margin of antennal II similar to *pallidicornis*, the four setae on the hind vein of the fore wing as in *manicatus*, and the fact that antennal VII is distinctly longer than VIII. Priesner notes that this is a common species in Egypt, and the present author has taken it several times in Wad Medani, Sudan. It has been recorded from Cyprus and India. Further comments on this specimen will be found under *manicatus*.

Holotype ♀ of *aethiops*. SUDAN : Wad Medani, Gezira Research Farm, on *Medicago sativa*, 5.ii.1931 (*W. P. L. Cameron*).

***Chirothrips manicatus* Haliday**

*Thrips (Chirothrips) manicata* Haliday, 1836 : 444.

*Chirothrips similis* Bagnall, 1909f : 34-35.

*Chirothrips ammophilae* Bagnall, 1927b : 564-565. **Syn. n.**

*Chirothrips similis* var. *productus* Bagnall, 1932b : 184.

*Chirothrips ambulans* Bagnall, 1932b : 185.

*Chirothrips laingi* Bagnall, 1932b : 185-186.

*Chirothrips manicatus* Haliday ; zur Strassen, 1959 : 89.

The above synonymy is taken from the studies on *Chirothrips* by zur Strassen (1959 and 1960). Priesner (1964 : 110) is not fully in agreement with these conclusions, particularly concerning the nominal species *pallidicornis* Priesner. In the present author's opinion, if *pallidicornis* is a distinct species<sup>1</sup> then *ammophilae* (syn.

<sup>1</sup> Zur Strassen (1967, *J. ent. Soc. sth. Afr.* 29 : 33) has recently shown that *pallidicornis* is to be regarded as a valid species.

*laingi*) is also distinct from *manicatus*. If, however, *pallidicornis* is synonymous with *manicatus*, then not only *ammophilae* but also, in all probability, *africanus* must be included as synonyms. These forms have been separated on the length of the tenth abdominal segment, the length of the ante-ocular projection, and the concavity or straightness of the outer margin of antennal II. Speyer (in litt.) has indicated that *pallidicornis* from New Zealand was restricted to *Dactylis glomerata* and *manicatus* was found on *Alopecurus pratensis*. Since *Chirothrips* species breed within the seeds of grasses it is possible that this close relationship between insect and host plant has facilitated the production of host-limited forms.

LECTOTYPE ♀ of *similis*. ENGLAND : Durham, Gibside, on grass, 1908 (R.S.B.).

Syntypes ♀ of *ammophilae*. FRANCE : Plage d'Hyères, *Ammophila*, ix.1927 (R.S.B.).

LECTOTYPE ♀ of *productus*. SPAIN : Puigcerda, *Avena*, viii.1926 (R.S.B.).

LECTOTYPE ♀ of *ambulans*. GALICIA : ex Collection Schille.

LECTOTYPE ♀ of *laingi*. FRANCE : Plage d'Hyères, *Ammophila*, ix.1927 (R.S.B.).

### ***Chirothrips meridionalis* Bagnall**

*Chirothrips meridionalis* Bagnall, 1927a : 566.

This is one of the few described species of *Chirothrips* with a forked trichome on antennal IV. It is readily separated from *aculeatus* Bagnall by the absence of any ante-ocular head projection and the weakness of the external projection on antennal II. The species has been found not only in the Mediterranean region, but also in North West Pakistan, and Mokwa, North Nigeria.

LECTOTYPE ♀. FRANCE : Villefranche, on *Brachypodium ramosum*, ii.1927 (R.S.B.).

### ***Craspedothrips minor* (Bagnall) comb. n.**

*Physothrips minor* Bagnall, 1921d : 393-394.

Zur Strassen (1966b) erected *Craspedothrips* for *hargreavesi* Karny, 1925, a species widespread in Africa. Bagnall described *minor* from two damaged females, one from Coimbatore and the other from Maddur in Southern India, and these specimens are very similar to *hargreavesi*. There are three pairs of ocellar setae and no sternal accessories, and both pairs of metanotal setae are at the anterior border. The sensoria on antennals III and IV are thick and sausage-like, and antennal IV is constricted in the apical half. The posteromarginal fringes of the tergites and sternites are not so well developed as in *hargreavesi*. *Toxothrips ricinus* Bhatti, 1967 is very similar to *minor*.



LECTOTYPE ♀. INDIA : Mysore, Maddur, *Ipomea staphylina*, 30.viii.1918 (*Ramakrishna*).

### **DENDROTHRIFOIDES** Bagnall

*Dendrothripoides* Bagnall, 1923c : 624-625. Type-species *D. ipomeae*, by monotypy.

The abdominal tergites of the species included in this genus bear laterally numerous, very stout microtrichia. The setae on the ninth abdominal tergite are very long and stout, rather flattened apically. In the structure and reduction of the wing setae the genus resembles *Asprothrips*.

### *Dendrothripoides ipomeae* Bagnall

*Dendrothripoides ipomeae* Bagnall, 1923c : 625.

*Dendrothripoides ipomeae* Bagnall ; Faure, 1941 : 107-110.

In describing a second species in this genus, *venustus*, Faure gave a number of additional details concerning the structure of *ipomeae*. The species is represented in the British Museum (Natural History) by the type series, and also females and larvae from Bermuda.

Syntypes ♀♀ ♂. INDIA : Mysore, Maddur, on *Ipomea staphylina*, 30.viii.1918 (*Ramakrishna*).

### **DENDROTHRIPS** Uzel

*Dendrothrips* Uzel, 1895 : 159-160. Type-species *D. tiliae* Uzel, a synonym of *D. ornatus* Jablonowsky, 1894, designated by Priesner, 1925.

*Dendrothripiella* Bagnall, 1927a : 567. Type-species *D. phyllireae*, by monotypy.

*Dendrothrips* Uzel ; Faure, 1960a : 16.

Bagnall described *Dendrothripiella* 'As in *Dendrothrips*, but with the antenna 7-jointed'. Faure has shown that the divisions of the apical antennal segments in this group are variable, and the genus is now used for species with antennae seven- to nine-segmented.

### *Dendrothrips decoris* (Bagnall)

*Dendrothripiella decoris* Bagnall, 1927b : 568-570.

*Dendrothrips decoris* (Bagnall) ; Faure, 1960a : 16.

This species is distinctively coloured, having antennals III, IV and V, and also the abdomen yellow, with the head, thorax and wings dark. The antennae are seven- or eight-segmented.

LECTOTYPE ♀. FRANCE : Plage d'Hyères, [*Phyllirea* or *Quercus coccifera*], ix.1927 (*R.S.B.*).

***Dendrothrips jeanneli*** Bagnall

(Text-fig. 11)

*Dendrothrips jeanneli* Bagnall, 1919 : 260-261.*Dendrothrips jeanneli* Bagnall ; Faure, 1964 : 62-69.

Faure redescribed this species without being able to compare the unique holotype with his South African specimens. However, his description clearly applies to this species, although one important character was not mentioned. The sternites of the female bear far more setae, six or more pairs, than any other described member of the genus. The present author has also seen numerous males and females of this species caught in yellow water-traps at Mokwa, Central Nigeria. In a small percentage of the specimens examined the terminal antennal segment is undivided, as in the holotype, whereas most individuals have nine segmented antennae.

Holotype ♀. [KENYA : Lake Victoria, Kisumu], 6.xii.1911 (*Alluaud & Jeannel*).

***Dendrothrips ornatus*** (Jablonowsky)*Thrips ornatus* Jablonowsky, 1894 : 93-99.*Dendrothrips ornatus* var. *schillei* Bagnall, 1927b : 568.*Dendrothrips schillei* Bagnall ; Bagnall, 1930a : 49.

The form *schillei* was described by Bagnall as having more extensive pale areas on the fore wing than *ornatus*. This species is variable in pigmentation and is occasionally a pest of *Ligustrum* (Privet) in England.

Holotype ♀ of *schillei*. GALICIA : ex collection Schille.

***Dendrothrips phyllireae*** (Bagnall)*Dendrothripiella phyllireae* Bagnall, 1927a : 567-568.*Dendrothrips phyllireae* (Bagnall) Faure, 1960a : 20.

This species was designated as the type of a monotypic genus, *Dendrothripiella*, which only differed from *Dendrothrips* in having seven-segmented antennae. Bagnall suggested that the species was near to *saltator* Uzel, but the sculpture of the metanotum and tergites is very different in these two forms. The specimen here selected as lectotype is labelled 'cotype', but it is the only member of the type series remaining in the Bagnall collection.

LECTOTYPE ♀. FRANCE : nr. Hyères la Plage, on *Phyllirea angustifolia*, ii.1927 (*R.S.B.*).

***Dendrothrips saltator*** Uzel*Dendrothrips saltatrix* Uzel, 1895 : 164-165.*Dendrothrips peucedani* Bagnall, 1932a : 162-163.*Dendrothrips saltator* Uzel ; Mound, 1965 : 141-144.

Bagnall's species *peucedani* was based on some rather large specimens of *saltator*. The species may be recognized from the form of the sculpture on the abdominal tergites.

Syntypes ♀♀ ♂♂ of *peucedani*. ENGLAND : Kent, Tankerton, on *Peucedanum officinale*, vi.1931 (R.S.B.).

### *Dendrothrips sexmaculatus* Bagnall

*Dendrothrips sexmaculatus* Bagnall, 1916b : 401.

*Dendrothrips sexmaculatus* Bagnall ; Faure, 1960b : 269-277.

Faure has redescribed this species from abundant material collected in South Africa. Bagnall's type series came from Ceylon but it is possible that the species is African in origin. It differs from other *Dendrothrips* species in the transverse pale band across the abdomen.

LECTOTYPE ♀. CEYLON : Peradeniya, 1913 (A. Rutherford No. 47).

### *Dinurothrips frontalis* (Bagnall)

*Heliothrips frontalis* Bagnall, 1916a : 213-214.

'*Dinurothrips*' *frontalis* (Bagnall) ; Stannard & Mitri, 1962 : 218.

Known from a single female, this species shows some resemblance to *Trypactothrips*. However, the fore wing chaetotaxy and wing retaining setae on abdominal tergites VII and VIII are similar to *Dinurothrips hookeri*.

Holotype ♀. AUSTRALIA : Victoria, Healesville, *Senecio dryandeus* (R. Kelly).

### *Dinurothrips vezenyii* Bagnall

*Dinurothrips vezenyii* Bagnall, 1919 : 256.

This species is known only from the holotype, a damaged micropterous female which lacks antennae. The specimen is very similar to *hookeri* Hood, the type of the genus, which is widespread in the tropics. It may possibly be a micropterous form of that species. The last abdominal segment is shorter than in *hookeri*, and the radially elongate reticulations which border the eyes of *hookeri* are subdivided in *vezenyii*.

Holotype ♀. ARGENTINE : Tucuman, xi.1905 (*Vezenyi*).

### *Elixothrips brevisetis* (Bagnall)

*Trypactothrips brevisetis* Bagnall, 1919 : 257.

*Elixothrips brevisetis* (Bagnall) ; Stannard & Mitri, 1962 : 202-205.

Stannard & Mitri record this species from various islands in the Western Pacific.

Holotype ♀. SEYCHELLES : Mahé, [Cascade, 800-1,500 ft.], 1909.

***EUHYDATOTHRIPS* Bagnall**

*Euhdatothrips* Bagnall, 1926c : 99. Type-species *E. nigripennis*, by monotypy.

This genus, based on a single male specimen mounted laterally on a slide, was compared to *Hydatothrips* Karny. The latter genus is a synonym of *Sericothrips*, whereas *Euhdatothrips* is a Heliothripine related to *Caliothrips*. The type specimen has been remounted dorsoventrally and is redescribed below, but many features are still not apparent. The genus may be defined as follows.

Antennae similar to *Caliothrips*; head reticulate, longer than broad, without large setae, mouth cone reaching middle of prothorax; prothorax reticulate, transverse; legs elongate as in *Sericothrips*; wings long and narrow, upper vein with wide interval in setal distribution, lower vein with four widely spaced setae; abdomen pale but apparently reticulate; armature of ninth and tenth tergites as in *Helionothrips*; sternal setae apparently long, two thirds as long as the sternites.

***Euhdatothrips nigripennis* Bagnall**  
(Text-fig. 8)

*Euhdatothrips nigripennis* Bagnall, 1926c : 99-100.

MALE : Colour pale yellow, but brown on vertex, metathorax, and antennals I, II, distal half of V and VI to VIII; fore wings dark brown. Antennae Heliothripid, trichomes on III and IV forked, long, that on IV extends to distal tip of V. Head reticulate, ocelli close together, elevated; setae minute, about  $2\mu$  long, one pair on anterolateral margins of ocellar triangle, ? one pair lateral to fore ocellus; two pairs of postocular setae situated between posterior ocelli and hind margin of eye.

Pronotum reticulate; one pair of anteromarginal setae and one pair of postero-angular setae  $12\mu$  long; disc with five or six pairs of setae  $8\mu$  long. Meso and metathorax reticulate. Legs elongate, tarsi undivided. Microtrichia of fore wings stout; upper vein with 8 (or 6) setae basally, and two near wing apex; lower vein with four widely spaced setae; wing apex pointed with two subapical setae.

Abdominal tergites with three pairs of setae, median pair posterior to median pores, close to hind margin. Reticulations equiangular medially, elongate laterally, apparently with some internal sculpture. Tergite IX with two pairs of stout thorn-like setae and tergite X with a circle of six papillae as in *Helionothrips*.

Holotype ♂. [TANGANYIKA] : Arusha, x-xi.1905 (*Katona*).

***EUPHYSOTHRIPS* Bagnall**

*Euphysothrips* Bagnall, 1926e : 646. Type-species *E. minozzii*, by monotypy.

This genus was erected for a unique species which bears two pairs of long post-ocular setae on the head and two pairs of elongate postero-angular prothoracic setae. The prothorax also bears numerous dorsal setae.

***Euphysothrips minozzii* Bagnall**  
(Text-fig. 21)

*Euphysothrips minozzii* Bagnall, 1926e : 646-648.

*Euphysothrips menozzii* Bagnall, 1927a : 570. [Emendation].

*Euphysothrips minozzii* Bagnall; Bagnall, 1933c : 653.

*Euphysothrips minozzii* Bagnall; Priesner, 1964 : 69.

This species has been described by both Bagnall and Priesner, but the chaetotaxy of the head is not referred to in full by either author. There are four pairs of post-ocular setae, the first and third being twice as long as the second and fourth. There are also four pairs of ocellar setae; 1, in front of the first ocellus; 2, lateral to the first ocellus; 3, within the ocellar triangle just behind the first ocellus; 4, posterolateral to the hind ocelli.

The specimen labelled 'type' is very seriously damaged and only one paratype female remains in Bagnall's collection. The data are as follows:

FRANCE: nr. Perpignan, fl. *Clematis vitalba*, viii.1926 (R.S.B.).

### *Frankliniella distinguenda* Bagnall

*Frankliniella distinguenda* Bagnall, 1919: 264-265.

*Frankliniella distinguenda* Bagnall; Moulton, 1948: 66-67.

Although Moulton did not examine the types, the notes given in his key to the species of *Frankliniella* clearly refer to *distinguenda*. Bagnall compared this species to *melanommata* Williams but antennal III of *distinguenda* does not have a shelf-like thickening around the pedicel. The interocellar setae arise within the ocellar triangle (position 2), and the teeth of the eighth tergal comb are slender and widely spaced. Moulton records the species from Argentina and there is material in the British Museum (Natural History) from a composite shrub, Espirito Santo, Brazil, 12.x.1928.

LECTOTYPE ♀. PARAGUAY: Puerto Max, 1905 (*Vezenyi*).

### *Frankliniella fulvipes* Bagnall

*Frankliniella fulvipes* Bagnall, 1919: 265-266.

*Frankliniella fulvipes* Bagnall; Moulton, 1948: 82.

Moulton states that the eighth tergal comb in this species is weak and irregular. This is true in the type specimens, but in some females from Brazil apparently of this species the teeth of the comb are finely pointed with broad triangular bases. The tibiae and tarsi, and antennals III to V are yellow, although the hind tibiae are sometimes shaded brown medially.

LECTOTYPE ♀. ARGENTINA: Tucuman, xi.1905 (*Vezenyi*).

### *Frankliniella gemina* Bagnall

*Frankliniella gemina* Bagnall, 1919: 265.

*Frankliniella gemina* Bagnall; Moulton, 1948: 67.

This species is very closely related to *F. distinguenda*, with which it was originally collected. The species apparently differ in the length of the major setae, but the type specimens of *gemina* are all damaged and poorly mounted. The antero-angular seta on the pronotum of *distinguenda* is almost twice as long as the anteromarginal seta. In *gemina* these two setae are nearly equal in length.

LECTOTYPE ♀. PARAGUAY: Puerto Max, 1905 (*Vezenyi*).

***Frankliniella intonsa*** (Trybom)

*Thrips intonsa* Trybom, 1895 : 188-190.

*Frankliniella breviceps* Bagnall, 1911b : 2.

*Frankliniella intonsa* (Trybom) ; Priesner, 1926 : 251.

Bagnall described *breviceps* on a single female lacking antennae taken at Acton, ENGLAND. This specimen is not in the Bagnall collection but the species is accepted as a synonym of the widespread *intonsa*.

***Frankliniella oxyura*** Bagnall

*Frankliniella oxyura* Bagnall, 1919 : 267-268.

*Frankliniella oxyura* Bagnall ; Moulton, 1948 : 60.

On account of the small interocellar setae this species was placed by Moulton in the *minuta*-group of *Frankliniella* species. Material has been examined from Paraguay and Brazil.

LECTOTYPE ♀. PARAGUAY : Puerto Max, 1905 (*Vezenyi*).

***Frankliniella pallida*** (Uzel)

*Physopus pallida* Uzel, 1895 : 101-102.

*Frankliniella ononidis* Bagnall, 1934e : 491-492. **Syn. n.**

*Frankliniella ononidis* Bagnall ; Priesner, 1964 : 62.

*F. ononidis* was distinguished from *pallida* by the longer setae on antennals III and IV, and the presence of fewer setae on the fore wing. These forms may be distinguished from *intonsa* by the teeth of the eighth tergal comb. In *intonsa* the comb teeth are long and regular, longer than the width of their triangular bases. In *pallida* many of the teeth, particularly laterally, have multiple apices, and the triangular bases are relatively wider.

Syntypes ♀ of *ononidis*. FRANCE : St. Palais-sur-Mer, on *Ononis repens*, 1.vii.1914 (*Vuillet*).

***Frankliniella priesneri*** Bagnall

*Frankliniella priesneri* Bagnall, 1923c : 627.

Bagnall distinguished this species from *pallida* through the possession of shorter setae at the abdominal apex, and longer postocular and prothoracic anteromarginal setae. However, the postoculars and prothoracic setae of the lectotype are no longer than in *pallida*, i.e. 18 $\mu$  and 45 $\mu$ . It seems probable that *priesneri* is a synonym of *pallida*.

LECTOTYPE ♀. TUNISIA : Tunis, 26.ii.1903 (*Biro*).

***Frankliniella schultzei*** (Trybom)

*Physopus schultzei* Trybom, 1910 : 151-154.

*Frankliniella sulphurea* Schmutz, 1913 : 1019. **Syn. n.**

*Frankliniella delicatula* Bagnall, 1919 : 263. **Syn. n.**

*Frankliniella dampfi* Priesner, 1923a : 64. **Syn. n.**

*Frankliniella dampfi* ssp. *interocellaris* Karny, 1925a : 126. **Syn. n.**

*Frankliniella africana* Bagnall, 1926c : 100-101.

*Frankliniella anglicana* Bagnall, 1926f : 281-282. **Syn. n.**

*Frankliniella kellyana* Kelly and Mayne, 1934 : 20. **Syn. n.**

The species here regarded as *schultzei* can be divided into two distinct colour forms, the dark '*schultzei*-form', and the pale '*sulphurea*-form'. In many collections made by the author in Sudan these two colour forms have been taken in the same flowers. This is also true of collections made in Kenya and Uganda. The pale forms have been compared with pale '*F. dampfi*' from Egypt and '*F. sulphurea*' from India, and the dark forms have been compared with '*F. interocellaris*' from Uganda, and *schultzei* (det. J. C. Faure) from South Africa. Apart from colour, no other morphological differences have been found between these two forms. It has been suggested that *sulphurea* can be separated from *schultzei* on the shape of the base of the internal trichome on antennal VI. In all the material examined by the author in this group this trichome had an elongate base, no specimens were seen with a circular base to the trichome. The situation with regard to this species in East Africa and the Nile Valley appears to be similar to that of the colour variants of *Frankliniella occidentalis* in California (Bryan and Smith, 1956).

Holotype ♀ of *africana*. GHANA : Aburi, fls. of *Strophanthus gratus*, 9.xi.1915 (*W. H. Patterson*).

Holotype ♀ of *anglicana*. ENGLAND : Berkshire, Besselsleigh, on pine, 13.vi.1914 (*R.S.B.*).

Holotype ♀ of *delicatula*. [KENYA] : nr. Nairobi, 1.1.1912 (*Alluaud & Jeannel*).

Syntypes ♀ of *interocellaris*. UGANDA : Kampala, *Ipomea hildebrandtei*, 26.xii.1920 (*H. Hargreaves*).

Syntypes ♀♀, ♂♂ of *kellyana*. SOUTH AUSTRALIA : Glen Osmond, Waite Institute, 28.ii.1928 (*G. Samuel*).

***Frankliniella setipes*** Bagnall

*Frankliniella setipes* Bagnall, 1919 : 266-267.

This species is very close to *fulvipes* Bagnall from which it differs in having the tibiae uniformly brown contrasting with the yellow tarsi.

LECTOTYPE ♀. ARGENTINA : Tucuman, xi.1905 (*Vezenyi*).

***Frankliniella tritici*** (Fitch)

*Thrips tritici* Fitch, 1855 :

*Frankliniella varicornis* Bagnall, 1919 : 268-270. **Syn. n.**

*Frankliniella tritici* f. *varicornis* Bagnall ; Moulton, 1948 : 87.

Moulton recognized three forms of *tritici* in addition to the nominal species. These forms were distinguished on colour alone, and no morphological differences are apparent between the *varicorne* holotype and typical specimens of *tritici*.

Holotype ♀ of *varicorne*. CANADA : Saskatchewan, Semans, on *Petalostemon purpureum*, 4.viii.1917 (A. E. Cameron).

### **GLAUCOTHIRIPS** Karny **stat. n.**

*Glaucothrips* Karny, 1921 : 240, as subgenus of *Pseudothrips* Bagnall. Type-species *Pseudothrips glaucus* Bagnall, by monotypy (not stated but indicated by tautonymy).

Karny failed to include any species in his new subgenus *Glaucothrips*, but in view of the fact that he derived the name from Bagnall's species *glaucus*, this failure is regarded as an unfortunate printer's error. *Glaucothrips* differs from *Pseudothrips* in having eight- rather than nine-segmented antennae, and the median setae on tergites III to VI are not closer together than their length. *Pseudanaphothrips* is rather similar but has both pairs of metanotal setae at the anterior margin, and the median tergal setae are very short.

### ***Glaucothrips glaucus*** (Bagnall) **stat. n.**

(Text-figs. 17 & 18)

*Pseudothrips glaucus* Bagnall, 1914b : 23.

*Pseudothrips (Glaucothrips) glaucus* (Bagnall) ; Karny, 1921 : 240. [By inference].

*Pseudanaphothrips turneri* Moulton, 1936 : 498-499. **Syn. n.**

The holotype of *glaucus* consists only of the thorax and abdomen. For the following redescription a series of females from South Africa, Cape Province, 1966, on plum trees has been used, as well as the holotype of *turneri*.

FEMALE : Length 800-1000 $\mu$ . Colour brown, pterothorax orange internally ; legs and antennals I and III paler ; wings shaded. Head rather wider than long (140 $\mu$   $\times$  100 $\mu$ ) ; postocular region with about eight transverse lines ; three pairs of ocellar setae present, pair III on anterolateral margins of triangle, a little shorter than one side of triangle ; five pairs of postocular setae, pair II from midline close to posterior ocelli. Antennae eight-segmented, lengths of segments in  $\mu$  ; 12 ; 25 ; 28 ; 28 ; 25 ; 33 ; 8 ; 10. Pronotal disc transversely striate, with about 15 pairs of setae 8 $\mu$  long ; one pair of postero-angular setae 25 $\mu$  ; four pairs of posteromarginals 8-12 $\mu$  long. Metanotum reticulate, median setae not at anterior margin. Fore wings 700 $\mu$  ; first vein with 15-22 setae (4 + 6 + 9), second vein with 13-15 regularly spaced setae. Abdominal tergites with transverse reticulations medially ; median pair of pores about three times their own diameters from tergal hind margin ; median setae on VI to VIII at least one third as long as the tergites ; comb on VIII long and regular, microtrichia with stout bases. Sternites with three or four pairs of posteromarginal setae.

Holotype ♀. SOUTH AFRICA : Cape Town, *Sebaea* (R. Marloth).

Holotype ♀ of *turneri*. SOUTH AFRICA : Mossel Bay, vi.1930 (R. E. Turner).



**HELIONOTHRIPS** Bagnall

*Helionothrips* Bagnall, 1932e : 506. Type-species *Heliothrips brunneipennis*, by monotypy.

*Helionothrips* Bagnall ; Faure, 1961a : 134.

***Helionothrips brunneipennis*** (Bagnall)

*Heliothrips brunneipennis* Bagnall, 1915a : 318.

*Helionothrips brunneipennis* (Bagnall) ; Faure, 1961a : 134.

The key given by Faure to separate the species of *Helionothrips* has not been found satisfactory when used on the material in the British Museum (Natural History). The presence or absence of a pale subapical band on the fore wing may not be consistent in all species, and there is doubt about the constancy of pigmentation of antennal II. In the description of *kadaliphus* (R. & M.), antennal II is stated to be either pale or dark, and females from New Guinea examined by the present author compare well with *brunneipennis* except in this character.

LECTOTYPE ♀. CEYLON : Peradeniya, *Litsea chinensis* leaves (A. Rutherford, 3648).

**HERCINOTHRIPS** Bagnall

*Hercinothrips* Bagnall, 1932e : 506. Type-species *Heliothrips bicinctus*, by original designation.

*Hercinothrips* Bagnall ; Mound, 1966a : 243-244.

Apart from the type-species *bicinctus*, Bagnall included in this genus *femoralis* Reuter and *pattersoni*, and he added that he thought that *errans* Williams should be included. This latter species is now placed in *Helionothrips*.

***Hercinothrips bicinctus*** (Bagnall)

*Heliothrips bicinctus* Bagnall, 1919 : 258-259.

*Hercinothrips bicinctus* (Bagnall) ; Faure, 1957 : 89-100.

This species is known as a minor pest in glasshouses in temperate regions and is widely distributed in the subtropics. It has been reported damaging bananas in Kenya and the Canary Islands.

LECTOTYPE ♀. BELGIUM : Brussels, *Chamaedorea fragans* in glasshouses, xii.1907 (R.S.B.).

***Hercinothrips pattersoni*** (Bagnall)

*Heliothrips pattersoni* Bagnall, 1919 : 259-260.

*Hercinothrips pattersoni* (Bagnall) ; Faure, 1961a : 152.

Apart from a single female taken recently on lime tree flowers at Ibadan, Nigeria, 12.v.1964, this species is known only from the type series.

Holotype ♀. GHANA : Aburi, *Granadilla* leaves, 11.xi.1915 (W. H. Patterson).

***Isochaetothrips seticollis* (Bagnall)**

*Taeniothrips seticollis* Bagnall, 1915b : 591-592.

*Isochaetothrips seticollis* (Bagnall) ; Moulton, 1928a : 227.

This species, described on a single female, was designated as the type of *Isochaetothrips* by Moulton. The first pair of ocellar setae are absent, and pair III lie on the anterior margins of the ocellar triangle. The metanotum is longitudinally striate and both pairs of setae are on the anterior margin. The tergites are devoid of sculpture medially, the eighth tergal comb is rather coarse, and the sternites are without accessory setae.

Holotype ♀. WESTERN AUSTRALIA : nr. Perth, Mundaring Weir, flowers of small *Acacia*, 3.viii.1914 (*E. B. Poulton*).

***Isochaetothrips setipennis* (Bagnall)**

*Physothrips setipennis* Bagnall, 1916b : 399.

*Physothrips ignobilis* Bagnall, 1926c : 101-102. **Syn. n.**

*Physothrips myrsiniicola* Bagnall, 1926c : 103. **Syn. n.**

This can be distinguished from *seticollis* by the more numerous pronotal setae, the longer and finer microtrichia of the comb on tergite eight, and the median pair of metanotal setae which are posterior to the lateral pair. The species *ignobilis*, based on two females, is here regarded as a small form of *setipennis*, and *myrsiniicola*, which was based on a single male, cannot be distinguished from males of *setipennis* except that one seta is not developed in the row of setae on the first vein of one fore wing.

LECTOTYPE ♀. AUSTRALIA : Victoria, Healesville, on cultivated white briar, 25.i.1914 (*R. Kelly*).

LECTOTYPE ♀ of *ignobilis*. AUSTRALIA : Victoria, Warburton, *Myrsine variabilis*, 17.i.1926 (*R. Kelly*).

Holotype ♂ of *myrsiniicola*. AUSTRALIA : Victoria, Warburton, *Myrsine variabilis*, 17.i.1926 (*R. Kelly*).

**ISONEUROTHRIPS Bagnall**

*Isoneurothrips* Bagnall, 1915b : 592. Type-species *I. australis*, by monotypy.

***Isoneurothrips australis* Bagnall**

*Isoneurothrips australis* Bagnall, 1915b : 592-593.

Although described originally from Western Australia, *australis* has since been recorded from many subtropical areas. The density of the abdominal pigmentation is quite variable.

LECTOTYPE ♀. WESTERN AUSTRALIA : Perth, Mundaring Weir, *Acacia* flowers, 3.viii.1914 (*E. B. Poulton* no. 16).

***Isoneurothrips multispinus* (Bagnall) comb. n.**

*Thrips multispinus* Bagnall, 1910d : 699-700.

This differs from *australis* in having three pairs of ocellar setae ; pair I anterolateral to first ocellus, II lateral to first ocellus near compound eyes, III within ocellar triangle on a line connecting the anterior margins of the hind ocelli. Sternal and pleurotergal accessory setae are absent, but there are twelve to thirteen pairs of setae on tergites three to five mainly near the lateral margins. The eighth tergite bears a complete comb in both sexes and the median pair of metanotal setae are very close to the anterior border of the sclerite.

LECTOTYPE ♀. HAWAII : Kilauea, vii.1895 (*Perkins* 575).

***Isoneurothrips orientalis* Bagnall comb. rev.<sup>2</sup>**

*Isoneurothrips orientalis* Bagnall, 1915b : 593-594.

*Thrips (Isothrips) orientalis* (Bagnall) ; Priesner, 1940 : 54.

This species differs from *australis* most importantly in lacking sternal accessory setae. However the chaetotaxy of the head and wings, and the structure of the metanotum, are sufficiently similar for the species to be regarded as congeneric.

LECTOTYPE ♀. BORNEO : Sarawak, Matang, 1,000 ft., in white flower, 20.xii.1913 (*G. E. Bryant*).

***Limothrips cerealium* Haliday**

*Thrips (Limothrips) cerealium* Haliday, 1836 : 445.

*Limothrips minor* Bagnall, 1927b : 565-567. [Synonymized by Morison, 1948 : 48].

Syntypes ♀ of *minor*. SARDINIA : Sorgono (*A. Krausse*).

***Limothrips denticornis* Haliday**

*Thrips (Limothrips) denticornis* Haliday, 1836 : 445.

*Limothrips incertis* Bagnall, 1926e : 642-643. **Syn. n.**

The sublateral setae on the ninth abdominal tergite of male *denticornis* specimens can be as long as the extreme lateral setae or only half that length in a single series of specimens. These setae are not always uniform on the two sides of the body. When elongate these setae are slender, but when short they are stout. *L. incertis* is regarded as an extreme example of this variation.

LECTOTYPE ♀ of *incertis*. FRANCE : Ax-les-Thermes, *Hordeum* sp., viii.1926 (*R.S.B.*).

**MICROCEPHALOTHRIPS Bagnall**

*Microcephalothrips* Bagnall, 1926c : 113. Type-species *Thrips abdominalis* Crawford, by monotypy.

The single species placed in this genus is widespread in the tropics and subtropics on Composite flowers (*Jagota*, 1961).

<sup>2</sup> Sakimura (1967, *Pacific Insects* 9 : 429-436) treats *Isothrips* as a subgenus of *Thrips*.

**ODONTOTHRPIELLA** Bagnall

*Odontothripiella* Bagnall, 1929a : 47. Type-species *Odontothrips fasciatipennis*, by original designation.

The three species included in this genus differ from *Odontothrips* species in the shorter ocellar setae, the long thin apex of the trichome on antennal VI, the relatively shorter fore wing setae, and the single seta at the posterior angles of the pronotum. In species of *Odontothrips* the male phallus bears a highly distinctive array of spines, but in *Odontothripiella* species the phallus is unarmed as in most Terebrantia.

***Odontothripiella australis*** (Bagnall)

*Odontothrips australis* Bagnall, 1918a : 204-205.

*Odontothripiella gracilis* Bagnall, 1929a : 48. **Syn. n.**

The male specimens referred to by Bagnall as *australis* may represent *bispinosus*. The two species were collected together originally, and the present author has examined a series of females of *australis* collected recently in New South Wales with four males of two species of *Odontothripiella*. *O. gracilis* is here regarded as a small form of *australis*.

Syntypes ♀. WESTERN AUSTRALIA : Perth, Mundaring Weir, in red papilionaceous flowers, 3.viii.1914 (*E. B. Poulton*).

Holotype ♀ of *gracilis*. SOUTH AUSTRALIA : Renmark, Hotel Gardens, Sweet Allysum, 3.x.1926 (*R. Kelly*).

***Odontothripiella bispinosa*** (Bagnall)

*Odontothrips bispinosus* Bagnall, 1918a : 203-204.

The unique female upon which this species is based was collected with *australis* and is very similar to that species except for the pair of remarkable spines on the abdomen.

Holotype ♀. WESTERN AUSTRALIA : Perth, Mundaring Weir, in red papilionaceous flower, 3.viii.1914 (*E. B. Poulton*).

***Odontothripiella fasciatipennis*** (Bagnall)

*Odontothrips fasciatipennis* Bagnall, 1916a : 217.

Although similar to *australis* and *bispinosa* in the ocellar chaetotaxy and the sculpture of the metanotum, *fasciatipennis* is quite distinct in having the second quarter of the fore wing dark and the rest of the wing pale.

LECTOTYPE ♀. SOUTH AUSTRALIA : Adelaide. Outer Harbour, *Mesembryanthemum* flower, 28.viii.1914 (*E. B. Poulton*).

**ODONTOTHRIPOIDES** Bagnall

*Odontothripoides* Bagnall, 1929a : 48. Type-species *O. morisoni*, by monotypy.

The single species at present in this genus differs from *Odontothrips* and *Odontothripiella* species in having no elongate setae on the posterior angles of the pronotum. There is a long interval without setae on the first vein of the fore wing.

***Odontothripoides morisoni*** Bagnall

*Odontothripoides morisoni* Bagnall, 1929a : 49.

Syntypes ♀♀ & ♂♂. [SOUTH AUSTRALIA : Clare, on *Goodenia*, 14.X.1926].

***Odontothrips biuncus*** John

*Odontothrips biuncus* John, 1921 : 7-8.

*Odontothrips uzeli* of Bagnall, 1924j : 272, *nec* Bagnall, 1919 : 262.

Bagnall described *uzeli* originally from material in Uzel's Collection. This has now been re-examined and represents *loti* Haliday. The material referred to by Bagnall in 1924 from Gibside, County Durham represents *biuncus*.

***Odontothrips loti*** (Haliday)

*Thrips loti* Haliday, 1852 : 1108.

*Odontothrips uzeli* Bagnall, 1919 : 262. **Syn. n.**

*Odontothrips anthyllidis* Bagnall, 1928c : 96-97.

*Odontothrips thoracicus* Bagnall, 1934a : 59-60.

*Odontothrips quadrimanus* Bagnall, 1934a : 60.

*Odontothrips brevis* Bagnall, 1934e : 488-489. [*Lapsus calami* for *brevipes*].

*Odontothrips brevipēs* Bagnall, 1934e : 488-489. **Syn. n.**

*Odontothrips loti* (Haliday) ; Priesner, 1964 : 66.

The name *brevis* appears at the beginning of a description in 1934, but the name given twice in the text is *brevipes*. The claw is missing from one fore tibia of the holotype female but the ninth tergite of the male is typical of *loti*.

Syntypes ♀ of *anthyllidis*. SCOTLAND : Aberdeen, *Anthyllis*, viii.1925 (*R.S.B.*).

Holotype ♀ of *brevipes*. SWITZERLAND : Lugano, viii.1929 (*J. J. Mann*).

LECTOTYPE ♀ of *quadrimanus*. ENGLAND : Kent, Tankerton, *Ononis spinosa*, vi.1931 (*R.S.B.*).

Holotype ♀ of *thoracicus*. ENGLAND : W. Grimstead, near Salisbury, *Ononis*, vii.1929.

Lectotype ♀ of *uzeli*. BOHEMIA : ex Collection Uzel.

***Odontothrips meridionalis* Priesner**

*Odontothrips ulicis* var. *meridionalis* Priesner, 1919a : 122.

*Odontothrips ignobilis* Bagnall, 1919 : 262-263. **Syn. n.**

*Odontothrips mutabilis* Bagnall, 1924j : 271-272. **Syn. n.**

*Odontothrips inermis* Bagnall, 1928c : 95-96. **Syn. n.**

*Odontothrips meridionalis* Priesner ; Priesner, 1964 : 67.

Bagnall's species *ignobilis* and *mutabilis* have both been regarded as synonyms of *meridionalis* by various authors, although Priesner (1964) re-established both names. The base of the wing in *ignobilis* is pale, although the costa is dark, but this is not uncommon in *meridionalis*. The colour of antennal IV does not differ in the syntypes of *mutabilis* from typical *meridionalis*. In a footnote to the description of *inermis*, Bagnall indicated the possibility that this species represented the male of *mutabilis*. The chaetotaxy of the ninth abdominal tergite in the holotype is typical of *meridionalis* and the fore tarsus bears a small tooth.

Holotype ♀ of *ignobilis*. SPAIN : Ortigosa (Lagrosa) (*Navás*).

Syntypes ♀ of *mutabilis*. ENGLAND : Hampshire, Bournemouth, *Ulex europaeus*, ix.1924 (*R.S.B.*).

Holotype ♂ of *inermis*. ENGLAND : Cheshire, Delamere, *Ulex*, 26.viii.1925 (*H. Britten*).

***Odontothrips morgani* Bagnall**

*Euthrips phalerata* of Morgan, 1913 : 1-3 nec Haliday, 1836 : 447.

*Odontothrips morgani* Bagnall, 1929a : 49.

The name *morgani* was proposed for the species referred to by Morgan as *phalarata* Haliday, and described by him from two females from *Plantago virginica*, Quincy, Florida. The species differs from *phalaratus* Haliday in having a complete row of setae on the first vein, but as far as the present author is aware, Bagnall never examined any *Odontothrips* specimens from Florida.

***Odontothrips ononidis* Bagnall**

*Odontothrips ononidis* Bagnall, 1934e : 490-491.

This species is known only from females. These, although described as being related to *confusus* Priesner, cannot be distinguished at present from *karnyi* Priesner, 1924a, or large specimens of *meridionalis* Priesner, 1919.

Syntypes ♀. FRANCE : St. Georges-de-Didonne, *Ononis natrix*, 15.vii.1914.

***Odontothrips phaleratus* (Haliday)**

*Thrips phalterata* Haliday, 1836 : 447.

*Odontothrips anisomeris* Bagnall, 1924j : 271.

*Odontothrips phaleratus* (Haliday) ; Bagnall, 1928c : 97.

Syntypes ♀ of *anisomeris*. ENGLAND : Surrey, Box Hill, *Vicia* sp., v.1924 ; Durham, Gibside, *Lathyrus pratensis*, vii.1924 (*R.S.B.*).

***Odontothrips vuilleti* Bagnall**

*Odontothrips vuilleti* Bagnall, 1934e : 489-490.

The unique holotype female is not in the Paris Museum, nor in the British Museum (Natural History). The published data were, FRANCE : Pyrénées, Cauterets, *Astragalus monspessulanus*, 25.v.1913 (*M. Vuillet*).

***Oxythrips ajugae* Uzel**

*Oxythrips ajugae* Uzel, 1895 : 137.

*Oxythrips pernicious* Bagnall, 1926f : 283. **Syn. n.**

Bagnall described *pernicious* on a single male, and distinguished this from *ajugae* by the shorter and broader antennal segments. This specimen is here regarded as a small example of *ajugae*.

Holotype ♂ of *pernicious*. ENGLAND : Surrey, Leith Hill, *Salix*, 2.v.1926 (*R.S.B.*).

***Oxythrips halidayi* Bagnall**

*Oxythrips halidayi* Bagnall, 1924j : 272-273.

Bagnall did not indicate any type series when describing this species, but stated that the species was found on *Fraxinus* in Britain from Deeside in the North to Devon in the South. Only three micropterous females remain in the collection, two from Durham, Gibside, vii.1924, and one from Kirtlington Park, Oxford, 21.ix.1913. The interocellar setae are longer than the sides of the ocellar triangle as in *quercicola*, but the latter species is pale, whereas *halidayi* is dark brown.

***Oxythrips nobilis* Bagnall**

*Oxythrips nobilis* Bagnall, 1927a : 569-570.

Priesner (1964 : 57) states that the pores on the eighth tergite in *nobilis* do not lie close to the hind margin of the tergite. However, in the seven females available from the type series, these pores lie very close to the hind margin. The species is close to *brevistylis* Trybom, from which it differs in having a partial suture on the ventral surface of antennal VI.

LECTOTYPE ♀. FRANCE : Eze, *Pinus halepensis*, iii.1927 (*R.S.B.*).

***Oxythrips quercicola* Bagnall**

*Oxythrips quercicola* Bagnall, 1926f : 282.

Bagnall described this species on three macropterous females but only a single specimen remains in the collection. It is a pale species with the interocellar setae larger than the sides of the ocellar triangle. The median pair of metathoracic setae apparently stand closer together than their length.

LECTOTYPE ♀. SCOTLAND : Cocksburnpath, *Quercus* flower, vi.1924 (*R.S.B.*).

***Oxythrips tristis* Bagnall**

*Oxythrips tristis* Bagnall, 1927b : 570-571.

This species is known from a single macropterous female. The interocellar setae are a little shorter than the sides of the ocellar triangle, much as in *ulmifoliorum* Haliday. These two species can be separated by the sculpture of the abdominal tergites. In *tristis* there are eight transverse lines, rather close together and barely anastomosing at all. In *ulmifoliorum* there are seven transverse lines which are wider apart and frequently anastomose medially.

Holotype ♀. FRANCE : Plage d'Hyères, *Eryngium maritimum* flowers, ix.1927 (R.S.B.).

***Oxythrips ulmifoliorum* (Haliday)**

*Thrips ulmifoliorum* Haliday, 1836 : 447.

*Scirtothrips ulmi* Bagnall, 1913k : 232-233.

Bagnall described *ulmi* on material collected on ' the common Elm ' in the midland counties of England—Oxfordshire, Warwickshire, and Berkshire. None of this material remains in the collection. The species is usually light brown with short interocellar setae (see under *tristis*).

**PANCHAETOTHRIPS Bagnall**

*Panchaetothrips* Bagnall, 1912b : 258. Type-species *Panchaetothrips indicus*, by monotypy.

***Panchaetothrips indicus* Bagnall**

*Panchaetothrips indicus* Bagnall, 1912b : 258-260.

*Panchaetothrips indicus* Bagnall ; Hood, 1954 : 30.

Hood gives a key for separating *indicus* from *noxius* Priesner. Moulton recorded *indicus* from Uganda on Coffee (1936 : 498) but one of the males upon which this record was based has been examined and is clearly *noxius*. Bagnall's species is recorded only from India. The maxillary palpi in the type specimens are two-segmented, not three as originally figured.

Syntypes ♀. INDIA : Madras, *Curcuma longa* leaves, 1889.

***Physothrips latus* Bagnall comb. rev.**

*Physothrips latus* Bagnall, 1912e : 191-192.

*Physothrips propinquus* Bagnall, 1921a : 62.

*Physothrips propinquus* Bagnall ; Bagnall, 1929f : 181.

*Taeniothrips latus* (Bagnall) ; Mound, 1966b : 57-58.

The type specimen of *latus* is rather small, and moreover has contracted strongly during the mounting procedure. No morphological differences apart from size



can be seen between the two nominal species. *Ph. latus* closely resembles *salicis* Reuter, the type-species of *Physothrips*, in the chaetotaxy of the ocellar region, the prothorax hind margin, the wings, and the metanotum. A metathoracic furcal spinula is indicated in some members of a series collected from *Betula* sp. leaves in Scotland by the present author. *Taeniothrips decoratus* Pelikan (1965 : 99-102), from the description, is closely related.

Holotype ♀. ENGLAND : Northumberland, Ninebanks, near Whitfield, *Scabiosa*, Summer 1911 (*H. S. Wallace*).

Holotype ♀ of *propinquus*. ENGLAND : Oxford, *Pinus*, vii.1914 (*R.S.B.*).

### ***Physothrips setiventris* Bagnall**

*Physothrips setiventris* Bagnall, 1918b : 61-63.

This species resembles *salicis* Reuter, the type-species of *Physothrips*, in the chaetotaxy of the ocellar region, the prothorax hind margin, the wings, and the metanotum. The eighth tergal comb is long and fine and a spinula is present on the metathoracic furca. However, the sternites bear twelve to twenty accessory setae and the tergites are covered laterally with numerous microtrichia. *Ph. setiventris* appears to be intermediate between *Physothrips* and *Mycterothrips*.

Holotype ♀. INDIA : Darjeeling, Ringtong, on tea bush, 14.vi.1916 (*E. H. Andrews*).

### ***Platythrips tunicatus* (Haliday)**

*Thrips tunicata* Haliday, 1852 : 1115.

*Bolacothrips nigricornis* Bagnall, 1913k : 239.

*Platythrips tunicatus* (Haliday) ; Bagnall, 1928d : 130.

Bagnall's species *nigricornis* was based on a single male. This specimen was subsequently recognized as the male of *tunicatus* Haliday but the preparation has now turned black.

Holotype ♂ of *nigricornis*. ENGLAND : Oxfordshire, Weston-on-the-Green, on sedge, viii.1913 (*R.S.B.*).

### ***Prosopothrips nigriceps* Bagnall**

*Prosopothrips nigriceps* Bagnall, 1927b : 570.

This species differs from the type of the genus, *rejdivskyi* Uzel, in the yellow prothorax and the shorter antennal segments. In the sixteen females available, antennal III is less than twice as long as broad, whereas in the single female *rejdivskyi* examined, antennal III is more than twice as long as broad.

Syntypes ♀. FRANCE : Hyères-la-Plage, on a small beach grass, ix.1927 (*R.S.B.*).

***Pseudanaphothrips achaetus* (Bagnall)**

(Text-figs. 15 &amp; 16)

*Pseudothrips achaetus* Bagnall, 1916b : 398-399.*Pseudanaphothrips achaetus* (Bagnall) Karny, 1921 : 242.

Karny (1921 : 216) suggested that this species should be the type of a new monotypic genus. *Pseudothrips inaequalis* (Beach) has a pair of long median setae on tergites three to six, two pairs of long postocular setae, and pair III of the ocellar setae arise on the anterior margins of the ocellar triangle. *P. achaetus* does not have long median tergal setae, has five pairs of short postocular setae, and pair III of the ocellar setae arise on the posterior margin of the ocellar triangle. Contrary to the original description, a comb is frequently represented on tergite eight by a few teeth either medially or laterally.

Syntypes ♀. SOUTH AUSTRALIA : Mt. Lofty Range, Adelaide, ? flowers of *Acacia myrtifolia* or *Epachris impressa*, 9.viii.1914 (E. B. Poulton).

***Pseudanaphothrips parvus* (Bagnall) comb. n.***Pseudothrips parvus* Bagnall, 1916a : 222-223.

The chaetotaxy of the head, and the sculpture and chaetotaxy of the metanotum of *parvus* are very similar to *achaetus*, the type-species of *Pseudanaphothrips*. In *achaetus* the pronotal posteromarginal setae are of equal length, in *parvus* the longest postero-angular seta is about twice as long as the minor setae.

LECTOTYPE ♀. AUSTRALIA : Queensland, Brandon, flower of ? *Helianthus* sp., 16.x.1914 (R. Kelly).

***Pseudanaphothrips uniformis* (Bagnall) comb. n.***Physothrips uniformis* Bagnall, 1926c : 102-103.*Isochaetothrips uniformis* (Bagnall) ; Moulton, 1928a : 227.

This species resembles *achaetus* in the structure of the metanotum and the chaetotaxy of the head. In the two females of the type series which have been studied, the major pronotal postero-angular setae are three times as long as the minor setae. The microtrichia of the eighth tergal comb are as long as the median setae on tergite eight.

LECTOTYPE ♀. AUSTRALIA : Victoria, Healesville, Ben Cairn, *Senecio dryadeus*, 17.i.1926 (R. Kelly).

***Rhipiphorothrips bicolor* (Bagnall)***Retithrips bicolor* Bagnall, 1913f : 290-291.*Rhipiphorothrips bicolor* (Bagnall) Bagnall, 1915a : 320.

*R. cruentatus* Hood, 1919 differs from *bicolor* and *pulchellus* Morgan in having a brown abdomen in the female, and a small lateral tooth on each side of tergite four

of the yellow abdomen of the male. It has further been claimed that the setae on tergite ten are not fan-shaped. However, in a long series of males from India and Pakistan in the British Museum (Natural History) these setae frequently appear to be acute due to the fan being orientated vertically. The expanded nature of the setae can then only be determined by the use of an oil immersion lens. Furthermore, the dark colour of the females is not constant. It seems possible that these three species are synonymous.

Syntypes ♀. CEYLON : on vines (*E. E. Green*).

### ***SCIRTOTHRIPS* Shull**

*Scirtothrips* Shull, 1909 : 222. Type-species *S. ruthveni* Shull, by monotypy.

*Sericothripoides* Bagnall, 1929d : 69. Type-species *Dendrothrips bispinosus*, by monotypy.

*Scirtothrips* Shull ; Bailey, 1964 : 329-362.

Bagnall compared his new genus to *Sericothrips* Haliday, but apart from the reduction in number of setae on the second vein of the fore wing the type-species, *bispinosus*, cannot be readily distinguished from other *Scirtothrips* species. Bailey gives *Sericothripoides* as a synonym of *Dendrothrips*, but the fore wing of the latter is highly distinctive with the anterior fringe cilia arising submarginally and not extending around the rounded wing apex.

### ***Scirtothrips bispinosus* (Bagnall)**

*Dendrothrips bispinosus* Bagnall, 1924d : 455.

*Sericothripoides bispinosus* (Bagnall) Bagnall, 1929d : 69.

*Scirtothrips bispinosus* (Bagnall) Mound, 1968a : [in press]

As in other species of *Scirtothrips*, there are three pairs of ocellar setae ; pair I anterior to the first ocellus, pair II lateral to the first ocellus near the compound eyes, pair III between the posterior ocellus. The fore wing in no way resembles *Dendrothrips* species, but differs from most *Scirtothrips* species in the reduction in number of setae on the hind vein. In the lectotype there are eight setae on the fore vein, but in two of the paratypes there are seven setae on the fore vein and one on the hind vein. Similar variation occurs in material of this species from Travancore, India, at the British Museum (Natural History). The metanotum is reticulate and the sternites are devoid of microtrichia medially. Bagnall's indication that this species was based on a male was apparently due to a misprint.

LECTOTYPE ♀. INDIA : Nilgiri Hills, Kotagiri, Tea, 6.vii.1922 (*Ramakrishna*).

### ***Scirtothrips dorsalis* Hood**

*Scirtothrips dorsalis* Hood, 1919b : 90-91 (April).

*Heliothrips minutissimus* Bagnall, 1919 : 260 (October).

*Scirtothrips dorsalis* Hood ; Mound, 1968a :

In this species the microtrichia extend across the posterior half of the median part of the sternites. Ocellar setae III are on the posterior margin of the ocellar triangle,

and the median metanotal setae are a little posterior to the lateral setae. The sculpture of the anterior half of the metanotum consists of parallel lines concentric about the mid-point of the anterior border of the sclerite, and the posterior and lateral areas bear elongate reticulations. The male does not have abdominal drepanae.

LECTOTYPE ♀ of *minutissimus*. INDIA : Bombay, Surat, on violet, ii.1906 (*Lefroy*).

### *Scirtothrips longipennis* (Bagnall)

*Euthrips longipennis* Bagnall, 1909d : 173-174.

*Scirtothrips longipennis* (Bagnall) ; Bailey, 1964 : 342-343.

This is a large species of *Scirtothrips* with very stout tergal microtrichia. The sternites are devoid of microtrichia medially, the metanotum is reticulate and the median pair of metanotal setae are only a very little posterior to the lateral pair. Pair III of the ocellar setae are on the anterior margins of the ocellar triangle. The species was described from specimens taken on the flowers and leaves of *Chamaedorea* under glass at the Brussels Botanic Gardens, Belgium. None of this series remains in the Bagnall collection and the two females labelled by Bagnall 'Type' were collected in England, Newcastle-on-Tyne, on *Adiantum*, xii.1908.

### *Selenothrips rubrocinctus* (Giard)

*Physopus rubrocinctus* Giard, 1901 : 263-265.

*Brachyurothrips indicus* Bagnall, 1926c : 98-99.

The red-banded Cacao thrips is recognized as a pest on several tree-crops throughout the tropics.

LECTOTYPE ♀ of *indicus*. INDIA : Calcutta, salt marsh, 8.iii.1914 (*T. Bainbrigge-Fletcher*).

### SYNAPTOTHIRIPS Trybom

*Synaptothrips* Trybom, 1910 : 155-156. Type-species *S. crassicornis*, by monotypy.

*Homothrips* Bagnall, 1915b : 588-589. Type-species *H. distinctus*, by monotypy.

*Limphysothrips* Bagnall, 1919 : 272. Type-species *L. paradoxus*, by monotypy.

*Synaptothrips* Trybom ; Mound, 1968b [in press].

This South African genus has recently been revised and a key published for the identification of the eleven species. *Limphysothrips* was distinguished from *Homothrips* by the presence of a pair of stout spines on the tenth abdominal segment, but the size of these spines is known to vary in at least one member of the genus.

### *Synaptothrips distinctus* (Bagnall)

*Homothrips distinctus* Bagnall, 1915b : 589.

*Synaptothrips distinctus* (Bagnall) Mound, 1968b [in press].

Lectotype ♀. SOUTH AFRICA : Cape Town, flower of Sugar Bush (Proteaceae), 13.vii.1914 (*E. B. Poulton* no. 7).

***Synaptothrips paradoxus* (Bagnall)**

*Limphysothrips paradoxus* Bagnall, 1919 : 272-273.

*Synaptothrips paradoxus* (Bagnall) Mound, 1968b [in press].

Holotype ♀. EAST AFRICA : Bismarkhugel [? TANGANYIKA : Bismarkburg]  
3.iv.1912 (*Alluaud & Jeannel* 70).

***TAENIOTHRIPS* Amyot & Serville**

*Taeniothrips* Amyot & Serville, 1843 : 644. Type-species *Thrips primulae* Haliday, 1836, designated by Karny, 1907 : 45.

*Amblythrips* Bagnall, 1911b : 3. Type-species *A. ericae*, by monotypy.

*Megalurothrips* Bagnall, 1915b : 589. Type-species *M. typicus*, by monotypy.

*Ceratothripoides* Bagnall, 1918a : 201. Type-species *C. brunneus*, by monotypy.

The specimens on which *Amblythrips ericae* Bagnall was based, were males, not females as was stated originally. The genus has been used for two species of *Taeniothrips* in which the males are reduced and apterous. *Megalurothrips* was based on a single female of a species now recognized to be related to *Taeniothrips nigricornis* (Schmutz). It is possible that this genus could be usefully revived to include certain *Odontothrips*-like species of *Taeniothrips*. *Ceratothripoides*, like *Ceratothrips* Karny, was erected for a specimen with aberrant antennae.

The genus *Taeniothrips* is clearly polyphyletic and many of its species are closely related to forms at present included in the genus *Thrips*. Table I draws attention to this relationship between the two genera, although only Bagnall's species or their senior synonyms are included. It is possible that the generic limits could be more realistically drawn following the vertical columns rather than the horizontal. The present division between *Thrips* and *Taeniothrips*, which is based purely on the seven- or eight-segmented condition of the antennae, is not sound morphology as it is the extremities of an insect's body which are most likely to be affected by abnormal growth conditions.

***Taeniothrips andrewsi* (Bagnall)**

*Physothrips andrewsi* Bagnall, 1921d : 394-395.

This species is very close to *Thrips albipes* from which it can only be distinguished by the larger size and longer antennae, and the uniform brown colour. *T. andrewsi* has been taken on tea in Assam. Only one specimen, marked cotype, remains in Bagnall's collection, and this specimen is here designated lectotype.

LECTOTYPE ♀. INDIA : Darjeeling District, Rington Tea Estate, on rose, 14.vi.1916 (*E. A. Andrews*).

***Taeniothrips antennatus* (Bagnall)**

*Physothrips antennatus* Bagnall, 1914b : 23-24.

Superficially similar to *xanthoceros* Hood, which has the same habit of feeding on fungus spores on Coffee, *antennatus* may be distinguished by the presence of ocellar

TABLE I  
Bagnall's species of *Thrips* and *Taeniothrips* or their senior synonyms

GROUP A			GROUP B		GROUP C	
Ocellar setae I present Sternal accessory setae absent			Ocellar setae I absent Sternal accessory setae present		Ocellar setae I absent Sternal accessory setae absent	
Metanotal setae at anterior			Metanotal setae not at anterior border		Metanotal setae not at anterior border	
Metanotal setae at anterior			Tergite II with 3 lateral setae		Tergite II with 3 lateral setae	
A1 Comb present	A2 Comb interrupted	A3 Comb absent	<i>andrewsi</i>	<i>atratus</i> †* <i>debilis</i> <i>gentianae</i> * <i>italicus</i> †* <i>longiceps</i> <i>sodatis</i> *	<i>vuilleti</i>	<i>immsi</i> *
<i>funtumiae</i> <i>tefroyi</i> <i>ventralis</i>	<i>frici</i> <i>kellyanus</i> <i>nigricornis</i> <i>peculiaris</i> <i>sjoestedti</i> <i>typicus</i>	<i>antennatus</i> <i>ericae</i> <i>discolor</i> <i>pullens</i>				<i>flavidulus</i>
			<i>albipes</i>	<i>griseus</i> <i>imaginis</i> *† <i>origani</i> <i>poultoni</i>	<i>coloratus</i>	<i>crassicornis</i> <i>euphorbicola</i> † <i>herricki</i> * <i>major</i> † <i>tabaci</i> †
						<i>flavidus</i> <i>funebris</i> <i>fulvipes</i> * <i>menyanthidis</i> † <i>pallidulus</i> <i>pusillus</i> <i>robustus</i>

\* Pleurotergal accessory setae present  
† Four or more distal wing setae  
‡ Comb interrupted medially

TAENIOTHRIPS

THRIPS

setae I, the lines of sculpture on the prothorax and metanotum, and the numerous pronotal discal setae. The present author has examined a specimen from Coffee at Bukoba, Tanzania, 18.vii.1931, determined originally as *xanthocerus*. The holotype is on a blackened slide, but two syntypes are in good condition.

Syntypes ♀. UGANDA : feeding on spores of Coffee Rust Fungus (*Gowdey*).

### *Taeniothrips atratus* (Haliday)

*Thrips atrata* Haliday, 1836 : 447.

*Ceratothrips britteni* Bagnall, 1914d : 2-4.

*Ceratothrips britteni* was based on a single female with deformed antennae.

Holotype ♀ of *britteni*. ENGLAND : Cumberland, Great Salkeld, *Scabiosa succisa*, 16.ix.1913 (*H. Britten*).

### *Taeniothrips brunneus* (Bagnall)

*Ceratothripoides brunneus* Bagnall, 1918a : 201-203 (2.iii.1918).

*Physothrips ventralis* Hood, 1918a : 116 (10.iv.1918). **Syn. n.**

*Physothrips marshalli* Bagnall, 1918c : 66-68 (v.1918). **Syn. n.**

Paratype specimens of *ventralis* from both Cameroons and Nigeria have been compared with the types of *brunneus* and *marshalli*. This species is common in West Africa and Uganda, but has not been recorded from South Africa. The three nominal species were described almost simultaneously, but Bagnall's *brunneus*, based on a single female with aberrant antennae, has priority.

Holotype ♀. GHANA, Aburi, on Cola shoots and buds, 5.xi.1915 (*W. H. Patterson*).

Holotype ♀ of *marshalli*. GHANA : Aburi, *Hibiscus sinensis* flowers, 30.x.1915 (*W. H. Patterson*).

### *Taeniothrips discolor* (Karny)

*Euthrips discolor* Karny, 1907 : 46.

*Physothrips navasi* Bagnall, 1921a : 64.

*Oxythrips forticornis* Bagnall, 1933c : 650-651. **Syn. n.**

This species is very close to *frici* Uzel, from which it can be distinguished by the presence of a pair of pores on the metanotum, the shorter pronotal postero-angular setae of which the outer is much smaller than the inner, and the absence of a comb on the eighth tergite. *Ph. navasi* is given as a synonym of *discolor* by Priesner (1964 : 78) but Bagnall's type series is on blackened slides. The unique holotype of *forticornis* has the outer pronotal postero-angular seta broken off on one side which probably accounts for its description as an *Oxythrips*.

Original data of *navasi*. SPAIN : Arnes (Tarragona), viii.1912 (*Navás*).

Holotype ♀ of *forticornis*. FRANCE : Arcachon, Mouth of Teste, *Juncus*, viii.1926 (*R.S.B.*).

***Taeniothrips ericae* (Haliday)**

*Thrips erica* Haliday, 1836 : 448.

*Amblythrips ericae* Bagnall, 1911b : 4.

*Oxythrips brevicollis* Bagnall, 1911b : 6.

Bagnall's *ericae* was described from five males, and *brevicollis* from a single female.

Syntypes ♂ of *ericae* Bagnall. ENGLAND : Yorkshire, Ravenscar, *Calluna*, ix.1910 (R.S.B.),

Holotype ♀ of *brevicollis*. ENGLAND : Yorkshire, Ravenscar, *Sphagnum*, ix.1910 (R.S.B.).

***Taeniothrips flavidulus* (Bagnall)**

*Physothrips flavidulus* Bagnall, 1923c : 628.

This species is close to *Thrips flavidus* in having ocellar setae III just within the ocellar triangle. In *flavidulus*, however, the pronotal discal setae are darker and, as Bagnall indicated, the antennae longer. The males described by Bagnall belong in the *albipes* group.

LECTOTYPE ♀. INDIA : Dehra Dun, *Eriobotrya japonica* flowers, i.i.1912 (A. D. Imms).

***Taeniothrips frici* (Uzel)**

*Physopus frici* Uzel, 1895 : 126-127.

*Physothrips brevicornis* Bagnall, 1916a : 220.

*T. frici* lives in the yellow flowers of various Compositae and has been collected in both Victoria and New South Wales on *Hypochoeris*, *Helianthus* and *Taraxacum*. The present author has also seen specimens from North West Pakistan. Ocellar setae III lie on the anterior margins of the ocellar triangle and the eighth tergal comb is absent in the males.

Syntypes ♀ of *brevicornis*. AUSTRALIA : Victoria, Ballarat, *Hypochoeris radicata*, 28.i.1915 (R. Kelly).

***Taeniothrips funtumiae* (Bagnall)**

*Physothrips funtumiae* Bagnall, 1913f : 292-293.

*Physothrips funtumiae* Bagnall ; Bagnall, 1918c : 68-69.

This species is similar to *Physothrips* species in having a spinula on the meta-thoracic furca, but the posterior margin of the pronotum bears four pairs of setae instead of only two.

LECTOTYPE ♀. UGANDA : Entebbe, *Funtumia elastica* (C. C. Gowdey).



***Taeniothrips gentianae*** (Bagnall)

*Physothrips gentianae* Bagnall, 1933c : 653-655.

Priesner (1964 : 73) gives this species as a form of *trybomi* Karny. I am not familiar with the latter species and cannot at present distinguish *gentianae* from *vulgatissimus* Haliday.

Syntypes ♀. ITALY : Dolomites, Lago di Misurina, 6,000 ft., *Gentiana asclepiadcea*, ix.1929 (R.S.B.).

***Taeniothrips gowdeyi*** (Bagnall)

*Ceratohrips gowdeyi* Bagnall, 1919 : 254-255.

*Taeniothrips debilis* Hood, 1925 : 136-137. **Syn. n.**

*Physothrips neavei* Karny, 1925a : 129. **Syn. n.**

*Physothrips gowdeyi* Bagnall, 1926c : 105-106.

Bagnall described both of the forms he called *gowdeyi* from the same series of specimens. The species was first described from a single female with aberrant antennae. One of Hood's five original specimens from Nigeria has been examined by the present author as well as the unique holotype of *neavei*.

Holotype ♀. UGANDA : Kampala, flower of Tree Tomato (*Solanum*), II.xi.1917 (C. C. Gowdey).

Holotype ♀ of *neavei*. UGANDA : Kampala, flower of *Ipomea hildebrandtei*, 26.xii.1920 (H. Hargreaves).

***Taeniothrips hispanicus*** (Bagnall)

*Physothrips hispanicus* Bagnall, 1921a : 63-64.

*Taeniothrips hispanicus* Bagnall ; Priesner, 1964 : 78.

This species is represented in Bagnall's collection by a single blackened slide of a male. No details are visible and most of the specimen has decomposed. The data are as follows: SPAIN : Arnes (Tarragona), 28.viii.1913 (*Navás*). Morison (1949 : 116) indicates that this is a synonym of *frici* Uzel.

***Taeniothrips immsi*** (Bagnall)

*Physothrips immsi* Bagnall, 1926c : 106-107.

*Thrips immsi* Bagnall, 1926c : 110.

The two nominal species called *immsi* were distinguished by the possession of seven- or eight-segmented antennae. Ocellar setae III are on the anterior margins of the ocellar triangle and the abdominal pleurotergites bear accessory setae, although these are absent from the sternites.

LECTOTYPE ♀. [INDIA : Bhowali Kumaon, 5,700 ft., *Clematis*, x.1909 (A. D. Imms)], Reg. 210.

LECTOTYPE ♀ of '*Thrips immsi*'. [INDIA : Dehra Dun, *Eriobotrya japonica*, I.i.1912 (A. D. Imms)], Reg. 200.

***Taeniothrips inconsequens*** (Uzel)

*Physopus inconsequens* Uzel, 1895 : 117-119.

*Physothrips calcaratus* Bagnall, 1916a : 221-222.

LECTOTYPE ♀ of *calcaratus*. BOHEMIA : ex Collection Uzel.

***Taeniothrips italicus*** Bagnall

*Taeniothrips italicus* Bagnall, 1926e : 650-651.

Priesner (1964 : 74) gives this species as a synonym of *annulatus* Karny and states that antennal IV is largely yellow. In the lectotype, however, both antennal IV and V are brown with only the basal constriction paler. The species differs from typical *atratus* in having antennal III yellow, and the number of setae on the distal half of the first vein variable from three to six.

LECTOTYPE ♀. ITALY : Portici (Napoli), in Caprifoglio, 31.v.1917 (C. Minozzi).

***Taeniothrips kellyanus*** (Bagnall)

*Physothrips kellyanus* Bagnall, 1916a : 219-220.

This species is related to *nigricornis* Schmutz and *typicus* Bagnall but differs from them in having the base of the large sensorium on antennal VI almost round, not elongate oval. Antennals III and IV are dark brown with the apical neck sharply yellow.

LECTOTYPE ♀. AUSTRALIA : Queensland, Brandon, on Composite flower ? *Helianthus* sp., 16.x.1914 (R. Kelly).

***Taeniothrips lefroyi*** (Bagnall)

*Physothrips lefroyi* Bagnall, 1913f : 292.

*Taeniothrips (Lefroyothrips) lefroyi* (Bagnall) Priesner, 1938 : 499.

This species differs from most other *Taeniothrips* species in the long postocular region of the head with strong transverse lines dorsally. The male bears three pairs of stout thorns on the ninth tergite.

Syntypes ♀♀ ♂. INDIA : Darjeeling, Lebong, tea-flowers, 6.ii.1909 (*Maxwell Lefroy*).

***Taeniothrips longiceps*** (Bagnall)

*Physothrips longiceps* Bagnall, 1916a : 220-221.

*Taeniothrips longiceps* (Bagnall) ; Priesner, 1938 : 522.

LECTOTYPE ♀. INDIA : Kulhara, Garhwal, 11,700 ft., *Rhododendron* flowers, 5.vi.1910 (*A. D. Imms*).

***Taeniothrips major* Bagnall**

*Taeniothrips major* Bagnall, 1916a : 216.

This species is very close to *picipes* Zett., the type-species of the genus *Taeniothrips*. The four specimens available of Bagnall's species can be separated from *picipes* by the dark colour of antennal III, and the origin of ocellar setae III on a line joining the posterior ocelli rather than just anterior to that line.

LECTOTYPE ♀. INDIA : Kulhara, Garhwal, 11,700 ft., *Rhododendron* flowers, 5.vi.1910 (*A. D. Imms*).

***Taeniothrips nigricornis* (Schmutz)<sup>3</sup>**

(Text-fig. 14)

*Frankliniella nigricornis* Schmutz, 1913 : 1020-1021.

*Physothrips usitatus* Bagnall, 1913f : 293-294.

*Physothrips usitatus* var. *cinctipennis* Bagnall, 1916a : 217-218.

*Physothrips brunneicornis* Bagnall, 1916a : 218. **Syn. n.**

*Taeniothrips nigricornis* (Schmutz) ; Priesner, 1938 : 470-471.

Priesner gives *brunneicornis* as a synonym of *distalis* Karny, a species not known to the present author. *T. nigricornis* is a highly variable species and in a long series the author has studied from New Guinea the largest specimen is almost twice as long as the smallest. The females are very similar to *sjostedti* Trybom, although the males are readily distinguished by the lack of the pair of marginal spines on tergite IX, which are found in the African species.

Syntypes ♀ of *usitatus*. INDIA : Allahabad, *Butea frondosa* flowers (*A. D. Imms*).

Syntypes ♀ of *cinctipennis*. AUSTRALIA : Queensland, Brandon, on small flowers (pea), 16.x.1914 (*R. Kelly*).

Holotype ♀ of *brunneicornis*. JAPAN : Kobe, iv.1914 (*J. E. A. Lewis*).

***Taeniothrips pallens* (Priesner) comb. n.**

*Oxythrips ericae* var. *pallens* Priesner, 1919b : 89.

*Anblythrips ericicola* Bagnall, 1927b : 573-574.

*Amblythrips pallens* (Priesner) ; Priesner, 1964 : 83.

Holotype ♀ of *ericicola*. FRANCE : Iles d'Hyères, Porquerolles, *Erica arborea*, ix.1927 (*R.S.B.*).

***Taeniothrips peculiaris* (Bagnall)**

*Physothrips peculiaris* Bagnall, 1918a : 206-207.

*Taeniothrips* (*Pongamiothrips*) *peculiaris* (Bagnall) Ananthkrishnan, 1962 : 90-91.

Bagnall described this species on a series of males but Ananthkrishnan has recently figured the female and male antennae. The sternites of the male bear

<sup>3</sup> Ananthkrishnan & Jagadish (1967, *Opusc. ent.* 32 : 159-160) indicate that *distalis* Karny, 1913, is the oldest name for this species.

medially seventy to eighty dagger-shaped setae. The female is variable in pigmentation, very similar to *nigricornis* but with the median setae on abdominal tergites II and III longer, about 0.25 as long as the pronotal postero-angulars.

Syntypes ♂. INDIA : Bengal, Pusa, on Lucerne, 24.ii.1906 (*Maxwell Lefroy*).

### *Taeniothrips sjostedti* (Trybom)

*Physopus sjostedti* Trybom, 1908 : 4-6.

*Physothrips variabilis* Bagnall, 1913f : 294. **Syn. n.**

*Taeniothrips sjostedti* (Trybom) ; Faure, 1960a : 34-44.

*Taeniothrips meridiana* Moulton, 1936 : 503-504. **Syn. n.**

The broad form of the head referred to by Bagnall in describing *variabilis* is due to crushing by the cover-slip in mounting. The present author has examined numerous specimens of this species, particularly from a suction-trap in Malawi, and the first vein of the fore wing occasionally bears a complete row of setae. The pale band on the fore wing is variable, but the shape of the teeth of the pleurosternites figured by Faure is a valuable distinction between this species and *nigricornis*. Both the holotype and allotype of *meridiana* are in the British Museum (Natural History).

LECTOTYPE ♀ of *variabilis*. COMORO ISLANDS : Mayotte, 'Coll : Marie, R. Oberthür'.

Holotype ♀ of *meridiana*. UGANDA : Kampala, 11.i.1924 (*H. Hargreaves*).

### *Taeniothrips sodalis* Bagnall

*Taeniothrips sodalis* Bagnall, 1926e : 651.

*Taeniothrips sodalis* Bagnall ; Priesner, 1964 : 74.

This species is represented in the Bagnall collection by a single male and female, both of which are damaged. The relationship of these to the *atratus-vulgatissimus* group is not clear.

LECTOTYPE ♀. ITALY : Portici (Napoli), in Caprifoglio, 31.v.1917 (*C. Minozzi*).

### *Taeniothrips spiranthidis* (Bagnall)

*Physothrips spiranthidis* Bagnall, 1926c : 104-105.

Although apparently related to *picipes* and *inconsequens*, *spiranthidis* can be distinguished from these two species by the origin of ocellar setae III just anterior to the lateral sides of the ocellar triangle.

LECTOTYPE ♀. AUSTRALIA : Victoria, Healesville, *Spiranthes australis*, 28.i.1923 (*R. Kelly*).

***Taeniothrips typicus*** (Bagnall)

(Text-fig. 13)

*Megalurothrips typicus* Bagnall, 1915b : 590-591.*Megalurothrips setipennis* Karny, 1925b : 11. **Syn. n.***Taeniothrips varicornis* Moulton, 1928b : 292. **Syn. n.**

Priesner (1938 : 510) gives *varicornis* as a synonym of *setipennis*. The present author has compared a paratype of *varicornis* with the unique holotype of *typicus*. The species is related to *nigricornis* but antennal III is yellow, IV yellow in basal half, and V yellow at extreme base.

Holotype ♀. SARAWAK : Mt. Matang, 1,000 ft., in white flower, 8.xii.1913 (*G. E. Bryant*).

***Taeniothrips vuilleti*** (Bagnall)*Physothrips vuilleti* Bagnall, 1933c : 655-656.*Taeniothrips vuilleti* Bagnall ; Titschack, 1967 : 1-16.

Although related to the *atratus*—*vulgatissimus* group, *vuilleti* is readily distinguished by the paler antennae, and the few accessory setae on sternite seven.

LECTOTYPE ♀. FRANCE : Banyul-sur-Mer, Carline Thistle, viii.1926 (*R.S.B.*).

***Thrips albipes*** Bagnall

(Text-fig. 20)

*Thrips albipes* Bagnall, 1914b : 25-26.*Physothrips albipes* Bagnall, 1916b : 401.*Physothrips pallipes* Bagnall, 1916b : 400.*Thrips pallipes* Bagnall, 1926c : 110.*Thrips versicolor* Bagnall, 1926c : 108-109.*Thrips albipes* Bagnall ; Mound, 1967a : 17.

This species has been referred by some authors to *Euthrips hawaiiensis* Morgan, 1913, which was described from two females with eight-segmented antennae in the U.S. National Museum Collection. The common Indian species *florum* Schmutz is very closely related and if it should prove identical, this is the earliest available name. In *versicolor* the head and thorax are clear yellow contrasting with the brown abdomen, and the *albipes* series are very similar in colour. The *pallipes* series are darker, the anterior part of the body being orange-brown and the abdomen dark brown. Morphologically I can find no differences between the specimens which can be interpreted as being of specific value. The eighth tergal comb is regular in typical Indian *florum* specimens, in some of the *albipes* specimens some of the microtrichia have multiple apices, and in the *pallipes* series certain females have a few microtrichia fused to form one or more triangular teeth. The sculpture and chaetotaxy is apparently identical.

LECTOTYPE ♀. JAPAN : Okinawa, Luchu Island, *Nasturtium*, v.1913 (J. E. A. Lewis).

LECTOTYPE ♀ of '*Physothrips albipes*'. JAPAN : Okinawa, Luchu Island, *Nasturtium*, v.1913 (J. E. A. Lewis).

Syntypes ♀ of *Thrips* and *Physothrips pallipes*. JAPAN : Kobe, Harada, *Chrysanthemum*, 15.xi.1915 (J. E. A. Lewis).

Syntype ♀ of *versicolor*. FIJI : Tamavui, Banana, 1.x.1924 (Campbell).

### ***Thrips assimilis* Bagnall**

*Thrips assimilis* Bagnall, 1913f : 294.

The unique holotype on which this species was based is on a slide which has turned black. Bagnall compared *assimilis* to *albopilosus* Uzel.

Holotype ♀. TUNISIA : Sousse, 28.ii.1903 (Biro).

### ***Thrips coloratus* Schmutz**

(Text-fig. 19)

*Thrips colorata* Schmutz, 1913 : 1013.

*Thrips japonicus* Bagnall, 1914c : 288. **Syn. n.**

*Thrips melanurus* Bagnall, 1926c : 111-112. **Syn. n.**

Type material of *coloratus* has not been examined, the above synonymies being based on specimens determined by Dr. H. Priesner. The species has been found to be common in North West Pakistan. Apart from the characters indicated in Table I this species is readily distinguished from the *florum* group by the fact that antennal IV is darker than antennal II. The hind margin of tergite eight is distinctly concave and the teeth of the comb are long and distinct.

LECTOTYPE ♀ of *japonicus*. JAPAN : Kobe, xi.1913 (J. E. A. Lewis).

Holotype ♀ of *melanurus*. INDIA : Darjiling, Ringtong Tea Estate, on rose, 14.vi.1916 (E. A. Andrews).

### ***Thrips crassicornis* Bagnall**

*Thrips crassicornis* Bagnall, 1923b : 59-60.

*Thrips crassicornis* Bagnall ; Mound, 1967a : 20.

Contrary to Bagnall (1928d : 130) this species can be separated from *euphorbiae* Knechtal, 1922, by the greater length of the postero-angular pronotal setae.

Syntypes ♀. ENGLAND : Devon, Newton Abbot, *Euphorbia* flowers.

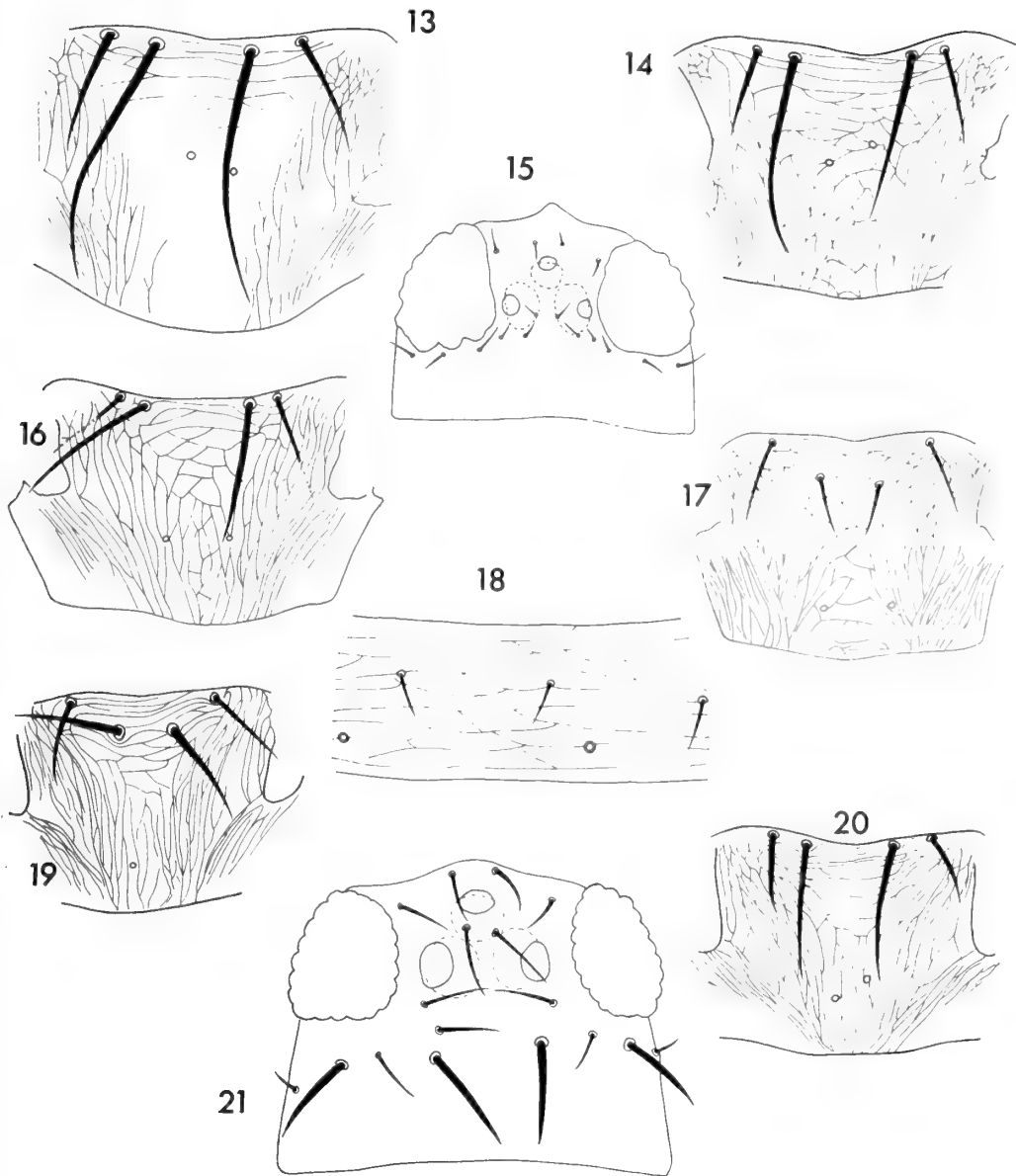
### ***Thrips euphorbiicola* Bagnall**

*Thrips euphorbiae* Bagnall, 1924c : 115, nec Knechtel, 1922.

*Thrips euphorbiicola* Bagnall, 1924j : 273-274 (nom. nov. for *euphorbiae* of Bagnall, 1924).

*Thrips euphorbiella* Bagnall, 1927b : 575-576. **Syn. n.**

*Thrips euphorbiicola* Bagnall ; Mound, 1967a : 19.



FIGS. 13-21. Figs. 13 & 14. Metanotum : 13, *Taeniothrips typicus* (*varicornis* paratype). 14, *Taeniothrips nigricornis* (*brunneicornis* paratype). Figs. 15 & 16. *Pseudanaphothrips achaeus* : 15, Dorsal chaetotaxy of head. 16, Metanotum. Figs. 17 & 18. *Glaucothrips glaucus* : 17, Metanotum. 18, Sculpture on abdominal tergite V. Figs. 19 & 20. Metanotum of *Thrips* species : 19, *T. coloratus* (*melanurus* holotype). 20, *T. albipes*, syntype female. Fig. 21. *Euphysothrips minozzii*, dorsal chaetotaxy of head.

Bagnall described *euphorbiella* from three females collected in Southern France. These specimens are here considered to be small examples of *euphorbiicola*.

LECTOTYPE ♀. ENGLAND : Hampshire, New Forest, *Euphorbia amygdaloides*, iv.1923.

Syntypes ♀ of *euphorbiella*. FRANCE : Plage d'Hyères, *Euphorbia paralias*, ix.1927 (R.S.B.).

### *Thrips flavidus* Bagnall

*Thrips flavidus* Bagnall, 1916b : 402.

*Physothrips flavidus* Bagnall, 1916b : 399-400.

Bagnall stated that he was describing *flavidus* in two separate genera 'to avoid confusion by other workers . . .'. The species is very close to *T. flavidulus* q.v. Antennal III is light brown distally, although I and II lack cuticular colour.

LECTOTYPE ♀. JAPAN : Kobe, vi. 1915 (*J. E. A. Lewis*).

Holotype ♀ of '*Physothrips flavidus*'. JAPAN : Kobe, vi.1915 (*J. E. A. Lewis*).

### *Thrips flavus* Schrank

*Thrips flava* Schrank, 1781 : 297.

*Physothrips flavus* Bagnall, 1928c : 98.

*Thrips flavus* Schrank ; Mound, 1967 : 18-19.

The female specimen that Bagnall referred to is not in the collection but the male is still available. This is an aberrant *Thrips flavus* and the collection data are: ENGLAND : Cheshire, Delamere, *Chamaenerion angustifolium*, 9.viii.1925 (*H. Britten*).

### *Thrips fulvipes* Bagnall

*Thrips fulvipes* Bagnall, 1923b : 59.

*Thrips fulvipes* Bagnall ; Mound, 1967a : 18.

The larval host of this species, which is not uncommon in England, is *Mercurialis perennis*.

Syntypes ♀. ENGLAND : Oxfordshire, Shotover, *Mercurialis perennis*, 6.v.1916 (*H. Britten*).

### *Thrips funebris* Bagnall

*Thrips funebris* Bagnall, 1924j : 274.

*Thrips funebris* Bagnall ; Mound, 1967a : 20.

This species is known to the present author only from the micropterous holotype. The eighth tergal comb consists of a complete row of triangular teeth, and the sculpture of the abdominal tergites extends across the median area. Ocellar setae III are lateral to the first ocellus.

Holotype ♀. ENGLAND : Hampshire, Hengistbury Head, *Carex vulpina*, ix.1924 (R.S.B.).



***Thrips griseus* Bagnall**

*Thrips griseus* Bagnall, 1916b : 403.

There are eight or nine accessory setae on each sternite in this species, and these setae are barely half the length of the sternites.

LECTOTYPE ♀. JAPAN : Kobe, vi.1915 (*J. E. A. Lewis*).

***Thrips herricki* Bagnall**

*Thrips herricki* Bagnall, 1926d : 545-548.

This large species, although based on North American material, is probably native to the mountains of Europe.

LECTOTYPE ♀. U.S.A. : New York, Ithaca, *Veratrum viride*, 27.vi.1924 (*G. W. Herrick*).

***Thrips imaginis* Bagnall**

*Thrips fortis* Bagnall, 1926c : 109-110. **Syn. n.**

*Thrips imaginis* Bagnall, 1926c : 111.

*Thrips imaginis* var. *apicalis* Bagnall, 1926c : 111.

Although *fortis* has page priority over *imaginis*, the latter name is so well established in Australian economic literature that the present author feels justified in accepting Recommendation 24A of the International Commission on Zoological Nomenclature (1961 : 25). The species *fortis* was based on a single, squashed, contracted female. The two females of *imaginis* labelled 'Types' do not bear any other data apart from a small label 'Reg. 41'. In the original description several host plants and dates were mentioned from Victoria and South Australia.

Holotype ♀ of *fortis*. AUSTRALIA : Victoria, Melbourne Botanic Gardens, *Canna*, 13.ii.1923 (*R. Kelly*).

***Thrips juniperina* Linnaeus**

*Physapus fuscus, alis albicantibus* De Geer, 1744 : 3-6.

*Thrips juniperina* Linnaeus, 1758 : 457.

*Thrips juniperina* Linnaeus ; Bagnall, 1909f : 39-41.

*Thrips junipericola* Morison, 1948 : 66.

*Thrips juniperina* Linnaeus ; Mound, 1967a : 21.

Linnaeus describes this species merely as 'T. elytris niveis, corpore fusco', 'Habitat in Juniperis', but he gives the earlier reference to De Geer quoted above. De Geer (1744 : 3-6) describes and figures (tab. I ; figs. 1-2) a typical member of *Thrips* genus which he finds throughout the year on the buds and in galls of Juniper bushes. Unfortunately Linnaeus, when naming *juniperina* and *physapus*, gives the two page references to De Geer the wrong way round. Contrary to the statement by Morison, there is nothing in the original description of the Juniper Thrips by De Geer, subsequently named *juniperina* by Linnaeus, to suggest that this is not the common species found on that plant in Northern Scotland.

***Thrips major* Uzel**

*Thrips major* Uzel, 1895 : 179-181.

*Physothrips inaequalis* Bagnall, 1928c : 98-99.

*Thrips major* Uzel ; Mound, 1966b : 56.

Bagnall described *inaequalis* from two females, one of which, labelled 'Type', has been re-examined recently and found to be an abnormal specimen of *major* Uzel.

LECTOTYPE ♀ of *inaequalis*. ENGLAND : Yorkshire, Tadcaster, *Tamus* flowers, vi.1920 (R.S.B.).

***Thrips menyanthidis* Bagnall**

*Thrips menyanthidis* Bagnall, 1923b : 58.

*Thrips menyanthidis* Bagnall ; Mound, 1967a : 20.

In the opinion of the present author, this species is a synonym of *fuscipennis* Haliday, from which it can be separated only by reason of its larger size. G. D. Morison, however, has studied the thrips on *Menyanthes* in the field for several years, and considers that they are specifically distinct. *Thrips paluster* Reuter can be distinguished by the complete comb on tergite eight and details of the metanotum.

LECTOTYPE ♀. ENGLAND : Westmorland, Patterdale, *Menyanthes trifoliata*.

***Thrips origani* Priesner**

*Thrips origani* Priesner, 1926b : 272.

*Thrips dyssochaetus* Bagnall, 1927a : 570-571.

*Thrips origani* Priesner ; Bagnall, 1928d : 131-132.

There are only two or three accessory setae on sternites IV to VI in this species. The specimens of *dyssochaetus* labelled 'cotype' come from *Origanum* at Box Hill, Surrey, England. This is the material referred to by Bagnall in 1928. The species *dyssochaetus* was described from females collected in FRANCE : Ax-les-Thermes, *Origanum vulgare*, viii.1926, but this material is not in Bagnall's Collection.

***Thrips pallidulus* Bagnall**

*Thrips pallidulus* Bagnall, 1924b : 424-425.

This species can be distinguished from both *flavidulus* and *flavidus* by the large equiangular reticulations on the median part of the metanotum.

LECTOTYPE ♀. [INDIA: Bengal, Pusa (*Lefroy*)].

***Thrips paludosus* Bagnall**

*Thrips paludosus* Bagnall, 1913k : 235-236.

The only available specimens, the type male and female, are on slides which have turned black. The original collection data were ; ENGLAND : Oxfordshire, Weston-on-the-Green, on sedge, viii.1913.

***Thrips poultoni* Bagnall**

*Thrips poultoni* Bagnall, 1933c : 656-657.

Holotype ♀. CANARY ISLANDS : Las Palmas, 28.vi.1914 (*E. B. Poulton*).

***Thrips pusillus* Bagnall**

*Thrips pusillus* Bagnall, 1926c : 112-113.

*Thrips meliaefloris* Hood, 1932 : 138-140. **Syn. n.**

A paratype of *meliaefloris* has been compared with females of *pusillus* collected in Sierra Leone, Ghana, Nigeria and Kenya. The colour of the body is here considered to be rather variable, but the apex of the abdomen is commonly darker than the base.

LECTOTYPE ♀. GHANA : Aburi, *Strophanthus gratus* flowers, 9.xi.1915 (*W. H. Patterson*).

***Thrips robustus* Priesner**

*Thrips robustus* Priesner, 1920 : 76.

*Thrips robustus* var. *pyrenaica* Bagnall, 1926e : 653.

*Thrips robustus* Priesner ; Priesner, 1964 : 95.

The variety *pyrenaica*, proposed for some material collected in the Pyrenees in France and Andorra, is regarded by Priesner as a form of *robustus*. No specimens bearing the variety name are present in Bagnall's Collection.

***Thrips tabaci* Lindemann**

*Thrips tabaci* Lindemann, 1888 : 61-75.

*Thrips hololeucus* Bagnall, 1914b : 24-25. **Syn. n.**

*Thrips adamsoni* Bagnall, 1923b : 58-59.

*Thrips debilis* Bagnall, 1923b : 60.

*Thrips frankeniae* Bagnall, 1926e : 654.

*Thrips dorsalis* Bagnall, 1927b : 576-577.

*Thrips tabaci* Lindemann ; Mound, 1967a : 19.

*Thrips tabaci* is variable in both colour and size but it can be distinguished by the possession of four setae on the distal half of the fore vein of the fore wing, and by the absence of the pori found in most other *Thrips* species anterolateral to the median setae of the ninth tergite. The second instar larva is remarkable in that it has no spiracles on abdominal segment two.

LECTOTYPE ♀ of *hololeucus*. JAPAN : Kobe, vii.1913 (*J. E. A. Lewis*).

LECTOTYPE ♀ of *adamsoni*. ENGLAND : Durham, Brockwell, *Menyanthes trifoliata* (*R. Adamson*).

Holotype ♀ of *debilis*. ENGLAND : Isle of Wight, near Blackgang Chine, on heath.

LECTOTYPE ♀ of *frankeniae*. FRANCE : Perpignan, *Frankenia*, viii.1926 (*R.S.B.*).

Syntypes ♀ of *dorsalis*. ENGLAND : Surrey, Woldingham, *Verbascum nigrum*, vii.1924 (*R.S.B.*).

**TRYPHACTOTHRIPS** Bagnall

*Tryphactothrips* Bagnall, 1919 : 256. Type-species *Dinuwothrips rutherfordi*, by original designation.

*Tryphactothrips* Bagnall ; Bagnall, 1921b : 264.

*Tryphactothrips* Bagnall ; Stannard & Mitri, 1962 : 214-215.

As a result of the revision by Stannard and Mitri, *Tryphactothrips* is now regarded as a monotypic genus.

***Tryphactothrips rutherfordi*** (Bagnall)

*Dinuwothrips rutherfordi* Bagnall, 1915a : 319-320.

*Tryphactothrips rutherfordi* (Bagnall) ; Stannard and Mitri, 1962 : 215.

This species is known only from the original material and the antennae have yet to be described.

Holotype ♀. CEYLON : Peradeniya, *Allamanda* leaves, 27.iii.1914 (*A. Rutherford*).

**PHLAEOTHRIPIDAE*****Abiastothrips schaubergeri*** (Priesner)

*Trichothrips schaubergeri* Priesner, 1920 : 86-87.

*Cratothrips priesneri* Bagnall, 1933c : 658-659.

*Abiastothrips schaubergeri* (Priesner) ; Priesner, 1964 : 141.

This species is very similar to *Polyphemothrips* species, but the monotypic genus *Abiastothrips* is retained by Stannard (1957 : 78) on account of the small size of the maxillary palps.

Holotype ♀ of *priesneri*. AUSTRIA : Warmbad-Villach, dead branch, ix.1929 (*R.S.B.*).

***Acaciothrips ebneri*** (Karny)

*Gynaikothrips ebneri* Karny, 1920a : 28-29.

*Gynaikothrips obscuripes* Bagnall, 1921c : 362-364.

*Acaciothrips ebneri* (Karny) ; Priesner, 1965 : 386-389.

Priesner has removed this species from *Gynaikothrips* on account of the short head and tube and the absence of accessory cilia on the fore wing. The insect causes terminal leaf galls on *Acacia* species very commonly along the Nile valley in Egypt and Sudan, and the present author has examined specimens from Ibadan, Nigeria.

LECTOTYPE ♀ of *obscuripes*. [EGYPT : Ezbst el Nakhl, *Acacia arabica*, vi.1909 (*F. C. Willcocks*)], Reg. 306.

**ACALLUROTHRIPS** Bagnall

*Acallurothrips* Bagnall, 1921b : 269. Type-species *A. macrurus*, by original designation.

Bagnall erected this genus for two species, each based on a badly damaged unique. It is not possible to redefine the genus from these specimens although it may be

noted that the praepectus is apparently absent, the maxillary stylets broad and V-shaped within the head, and the apex of the tube strongly constricted. Stannard (1957) indicates that the genus is probably related to *Pygothrips* and *Nesothrips*.

### *Acallurothrips macrurus* Bagnall

*Acallurothrips macrurus* Bagnall, 1921b : 270-271.

The antennae are seriously damaged but the suture between segments VII and VIII is probably incomplete. The sense cones are long and slender, two on III and three on IV. The fore tarsi are short with a stout tooth laterally and apical claw, the mesonotum weakly sculptured but the pelta strongly reticulate and moderately wide.

Holotype ♀. SEYCHELLES : Mahé, [Mt. Sebert, 2,000 ft., 1908-09 (*H. Scott*)].

### *Acallurothrips proturus* Bagnall

*Acallurothrips proturus* Bagnall, 1921b : 269-270.

The fore tarsus bears a stout apical claw but the lateral tooth appears to have been broken.

Holotype ♀. SEYCHELLES : Silhouette, [Mare aux Cochons, 1,000 ft., ix.1908 (*H. Scott*)].

### *Acanthothrips nodicornis* (Reuter)

*Phloeothrips nodicornis* Reuter, 1880 : 16.

*Acanthothrips americanus* Bagnall, 1933b : 123.

Bagnall described *americanus* from two specimens from North America, in which the hind tibiae are scarcely paler at their extremities than they are medially. In typical specimens of *nodicornis* the hind tibiae are yellow at base and apex. The genus *Acanthothrips* has been used as a subgenus of *Phlaeothrips* by some authors but can be distinguished by ; (1) antennal IV bears three sense cones and the apex of the segment is prolonged beyond the base of these cones ; (2) the meso- and metanota and sometimes the pronotum are heavily sculptured. The present author has examined *albivittatus* Hd. and *vittatus* Hd., as well as one syntype of *albovittatus* Schille which should also be included in this genus (**comb. n.**).

LECTOTYPE ♂ of *americanus*. MICHIGAN, U.S.A. : Baldwin, on rotting poplar stump, 18.viii.1908 (*J. D. Hood*).

### ACTINOTHRIPS Bagnall

*Actinothrips* Bagnall, 1909k : 332-333. Type-species *A. longicornis*, by monotypy.

*Actinothrips* Bagnall ; Stannard, 1957 : 90-91.

***Actinothrips longicornis*** Bagnall

*Actinothrips longicornis* Bagnall, 1909k : 333-334.

*Actinothrips longicornis* Bagnall ; Hood, 1935 : 247.

All that remains of the unique specimen upon which this species was described is the tube mounted on a slide. The rest of the specimen is apparently lost as it was not returned to Copenhagen, the published depository. The original locality was VENEZUELA : Caracas (*Meinert*).

**ALEURODOTHRIPS** Franklin

*Aleurodothrips* Franklin, 1909 : 228. Type-species *Cryptothrips fasciapennis* Franklin, by monotypy.

*Microcanthothrips* Bagnall, 1914c : 295-296. Type-species *Cephalothrips spinosus* Bagnall, by monotypy.

***Aleurodothrips fasciapennis*** (Franklin)

*Cryptothrips fasciapennis* Franklin, 1908 : 727-729.

*Cephalothrips spinosus* Bagnall, 1909d : 174-175.

Franklin's description was based on a unique female and Bagnall's on a unique male. The species is apparently pan-tropical and is unusual amongst the Tubulifera in having banded wings. The males have a stout spur on the internal margin of the fore femora, and a comb of four or more setae medially on sternite five.

Holotype ♂ of *spinosus*. BELGIUM : Brussels Botanical Gardens (under glass), *Strelitzia nicolai*, iv.1908.

**ANACTINOTHRIPS** Bagnall

*Anactinothrips* Bagnall, 1909k : 329-330. Type-species *A. meinerti*, by monotypy.

*Anactinothrips* Bagnall ; Stannard, 1957 : 93.

As indicated by Stannard this genus is close to *Elaphrothrips*. The praepectus is present and the mesopraesternum very broad. In the three species described by Bagnall there is only a single pair of wing retaining setae on each tergite. The antennal sense cones are much shorter than the antennal setae, there are two sense cones on III and four on IV.

***Anactinothrips distinguendus*** Bagnall

*Anactinothrips distinguendus* Bagnall, 1914f : 379-380.

Holotype ♂. GUYANA : Bartica, Mango leaves, 15.vi.1913 (*G. E. Bodkin*).

***Anactinothrips longisetis*** Bagnall

*Anactinothrips longisetis* Bagnall, 1926d : 556-557.

Holotype ♀. GUYANA : Cattle Trail Survey, vi.1919.

***Anactinothrips meinerti*** Bagnall

(Text-fig. 41)

*Anactinothrips Meinerti* Bagnall, 1909k : 330-332.

Although the description refers to a representative of both sexes the male is apparently lost as it is in neither the British Museum (Natural History) nor the Copenhagen University Museum.

Holotype ♀. VENEZUELA : Caracas (*Meinert*).

***Androthrips flavipes*** Schmutz*Androthrips flavipes* Schmutz, 1913 : 1031-1033.*Androthrips flavipes* Bagnall, 1914b : 27-28.*Androthrips flavipes* Schmutz ; Ananthakrishnan, 1964 : 28-29.

Both Bagnall and Schmutz described this species from material collected in the same locality in Ceylon.

Holotype ♀ of Bagnall's species. CEYLON : Peradeniya, *Memexylon umbellatum*, 28.vi.1913 (*A. Rutherford*).

***Apterygothrips hispanicus*** (Bagnall)*Cephalothrips hispanicus* Bagnall, 1916b : 409-411.*Apterygothrips hispanicus* (Bagnall) ; Zur Strassen, 1966a : 165.

The two females referred to in the original description are macropterous but the wings have been broken. A further female, from St. Cyr-sur-Mer, France, has recently been described as a new species, *priesneri* Zur Strassen.

Holotype ♀. SPAIN : [Zaragosa, 8.iv.1913 (*Navás*)].

***Arrhenothrips lewisi*** (Bagnall) **comb. n.**

(Text-fig. 22)

*Mesothrips lewisi* Bagnall, 1921c : 366-367.*Mesothrips lewisi* Bagnall ; Bagnall, 1924k : 636.

According to the key to *Arrhenothrips* species published by Faure (1961b : 86) this species differs from the other members of the genus with accessory fore wing cilia in having two sense cones on antennal III and three on IV. The pelta is narrow and bell-shaped with a wide posterior margin.

LECTOTYPE ♀. JAPAN : Ashiya, on grass, 5.vii.1917 (*J. A. E. Lewis*).

**BACTRIANOTHRIPS** Bagnall*Bactrianothrips* Bagnall, 1936 : 226-227. Type-species *B. alluaudi*, by monotypy.

This monotypic genus is closely related to *Bactridothrips* and *Cervothrips* in that the male has normal spiracles on segment VIII, and the lateral processes on segment VI

are reduced to small tubercles. *Eidothrips* similarly has normal spiracles on segment VIII, whereas in the males of *Bactrothrips* these spiracles are greatly enlarged and elongate dorsoventrally.

### ***Bactrianothrips alluaudi* Bagnall**

*Bactrianothrips alluaudi* Bagnall, 1936 : 227-228.

'Type' ♂ and ♀. MADAGASCAR : Tanala forest, between Savondron and Andranomafana, 1901 (*Alluaud*). Paris Museum.

Paratypes ♀ with identical data in British Museum (Natural History).

### ***Bactridothrips laingi* Bagnall**

*Bactridothrips laingi* Bagnall, 1926d : 558.

*Bactridothrips laingi* Bagnall ; Priesner, 1952 : 874-875.

*Actinothrips hargreavesi* Bagnall, 1926d : 555-556. **Syn. n.**

Although the name *hargreavesi* has page priority, the present author as first reviser (International Code of Nomenclature, Article 24) has adopted the name associated with the males as females are less easily recognized in this genus. The females recorded by Moulton from Natal (1930b : 416) are not *laingi* but might represent *moultoni*. The fore tibiae of *laingi* are brown, the hind tibiae weakly yellow apically, and the internal pair of epimeral setae are about half as long as the major epimerals.

Holotype ♂. SIERRA LEONE : Taninahun, 6.ii.1925 (*E. Hargreaves*).

Holotype ♀ of *hargreavesi*. SIERRA LEONE : Njala, 23.v.1926 (*E. Hargreaves*).

### ***Bactridothrips moultoni* Bagnall**

*Bactridothrips moultoni* Bagnall, 1932e : 513-514.

*Bactridothrips laingi* Moulton, 1930 : 416, *nec* Bagnall, 1926.

Bagnall described this species from a single male which has yellow apices to the tibiae, and the inner epimeral seta not enlarged. This male was collected with the holotype male of *natalensis* Moulton. The single female and the broken specimen referred to by Moulton as *laingi* apparently represent either *moultoni* or *natalensis*.

Holotype ♂. SOUTH AFRICA : Zululand, Eshowe, 6-31.v.1926 (*R. E. Turner*).

### ***Bactridothrips propinquus* Bagnall**

*Bactridothrips propinquus* Bagnall, 1936 : 228-229.

*Bactridothrips propinquus* Bagnall ; Priesner, 1952 : 874-876.

Holotype ♂. CONGO : Ogooue, Lambaréné, 1912 (*R. Ellenberger*). Paris Museum.

Allotype and paratype ♀ with identical data in British Museum (Natural History).



***Bactridothrips serraticornis* Bagnall**

*Bactridothrips serraticornis* Bagnall, 1921d : 397.

*Bactridothrips serraticornis* Bagnall ; Ananthakrishnan, 1964 : 85.

It is possible that *serraticornis* may eventually be shown to be synonymous with *idolomorphus* Karny from Perak.

Holotype ♂. CEYLON : Pundaluoya (*E. E. Green*).

**BACTROTHRIPS Karny**

*Bactrothrips* Karny, 1912c : 131. Type-species *B. longiventris*, by monotypy.

*Krinothrips* Bagnall, 1918a : 220. Type-species *K. divergens*, by monotypy.

*Bactrothrips* Karny ; Priesner, 1952 : 866-876.

This genus differs from *Bactridothrips*, *Cervothrips* and *Eidothrips* in having the spiracles on abdominal segment VIII of the males much enlarged and elongate dorsoventrally. The lateral tubercles on segment VII are larger than those on VIII.

***Bactrothrips divergens* (Bagnall)**

*Krinothrips divergens* Bagnall, 1918a : 220-221.

*Bactrothrips divergens* (Bagnall) ; Priesner, 1952 : 873-875.

*Actinothrips ritchianus* Bagnall, 1932e : 517-518. **Syn. n.**

There are two pairs of major epimeral setae in this species, and the hind tibiae are yellow in the apical half compared to the almost completely brown fore and mid tibiae.

Syntypes ♂ and ♀♀. GHANA : Aburi, Adawsi Rd., 27.i.1914 (*W. H. Patterson*).

Holotype ♀ of *ritchianus*. TANGANYIKA : Maraka, on tobacco, ix.1926 (*A. H. Ritchie*).

***Bagnalliola terminalis* (Bagnall)**

*Brachythrips terminalis* Bagnall, 1927a : 571-573.

*Bagnalliola terminalis* (Bagnall) ; Priesner, 1964 : 187.

The unique holotype of this species can be recognized as a male on account of the short stout B<sub>2</sub> setae on abdominal segment IX.

Holotype ♂. FRANCE : Tamaris, *Erica arborea*, I.iii.1927 (*R.S.B.*).

***Caudothrips buffai* Karny**

*Caudothrips buffai* Karny, 1921 : 230.

*Megathrips lesnei* Bagnall, 1933c : 659-661. **Syn. n.**

The unique holotype of *lesnei* is here interpreted as a small form of *buffai* which is known from Italy and Southern France on *Quercus ilex*. The monotypic genus *Caudothrips* is distinguished from *Megathrips* in Europe by the very long tube. The

pronotal antero-angular and midlateral setae are close together, and if the world fauna is taken into consideration it is unlikely that *Caudothrips* will stand.

Holotype ♂ of *lesnei*. ALGERIA : Ravin de la Femme Sauvage (env. d'Alger), xii.1892 (*P. Lesne*). Paris Museum.

### *Cephalothrips coxalis* Bagnall

*Cephalothrips coxalis* Bagnall, 1926e : 657-658.

*Cephalothrips spartiicola* Bagnall, 1927b : 581-582. **Syn. n.**

The only specimens of *spartiicola* which have been seen are labelled 'paratypes' and these are here regarded as the apterous forms of *coxalis*. I am grateful to Dr. zur Strassen for discussing this synonymy with Professor Bournier.

Holotype ♀. FRANCE : Banyul-sur-Mer, 'Carline-Thistle', viii.1926 (*R.S.B.*).

Paratypes ♀ and ♂♂ of *spartiicola*. FRANCE : Plage d'Hyères, *Spartium junceum*, ix.1927 (*R.S.B.*).

### *CERVOTHRIPS* Bagnall

*Cervothrips* Bagnall, 1936 : 229. Type-species *C. berlandi*, by monotypy.

This genus is related to *Bactrianothrips*, *Bactridothrips* and *Eidothrips* in the form of the spiracles on segment VIII of the male, however the lateral processes on segment VI are forked.

### *Cervothrips berlandi* Bagnall

*Cervothrips berlandi* Bagnall, 1936 : 229-230.

*Cervothrips berlandi* Bagnall ; Priesner, 1952 : 876-877.

Priesner has recorded a male apparently of this species from the Nimba Mountains, Guinea.

Holotype ♂. CONGO : Ogoone, Lambaréné, 1912 (*Ellenberger*). Paris Museum.

### *CHIOTHRIPOIDES* Bagnall

*Chiothripoides* Bagnall, 1915d : 505. Type-species *C. typicus*, by monotypy.

*Chiothripoides* Bagnall ; Stannard, 1957 : 38-39.

### *Chiothripoides typicus* Bagnall

*Chiothripoides typicus* Bagnall, 1915d : 505-506.

The eighth abdominal sternite of this species bears several finger-like projections on the posterior margin. The tergites have one pair of rather straight wing retaining setae.

Holotype ♀. TRINIDAD : Arima, Verdant Vale, on a window (*Urlich*).

**CLEISTOTHRIPS** Bagnall

*Cleistothrips* Bagnall, 1932e : 511. Type-species *C. idolothripoides*, by monotypy.

Head long, arched dorsally with numerous transverse reticulations, eyes small ; antennae seven-segmented, antennal III rather elongate, sense cones long. Maxillary stylets slender, close together in midline of head ; maxillary palps rather large. Praepectus absent, mesopraesternum well developed, only epimeral setae well developed on prothorax. Fore tarsus with a claw in female ; wings broad with numerous accessory cilia. Pelta bell-shaped ; tube long and setose.

As Bagnall indicated, this genus is close to *Docessissophothrips*, but it may prove to be a synonym of *Polyphemothrips*. From the latter genus *Cleistothrips* can be distinguished by the more elongate tube which bears numerous setae and lacks reticulations.

***Cleistothrips idolothripoides*** Bagnall

(Text-fig. 23)

*Cleistothrips idolothripoides* Bagnall, 1932e : 512-513.

The following notes are based on the holotype, which lacks antennae, and two other females loaned by Miss Anne Ward of the New Zealand Department of Agriculture, Levin. This is intended to supplement the description given by Bagnall.

Dorsal surface of head with two pairs of pale major setae, postocellars 230 $\mu$ , postoculars 280 $\mu$ , and about twelve pairs of shaded minor setae about 35 $\mu$  long. Sensoria on antennals III and IV long, extending to the midpoint of antennals IV and V. Pronotum transverse, epimeral seta pale 220 $\mu$ , remaining setae dark and shorter, midlateral 80 $\mu$ , postero-angular 60 $\mu$ . Fore tarsus with a short blunt tooth directed forward. Fore wing with four basal setae, 35 $\mu$ , 100 $\mu$ , 170 $\mu$ , 250 $\mu$ . Pelta narrow and bell-shaped at the anterior but with long extensions basally. Lateral abdominal setae pale, long and fine, segment IX with B<sub>1</sub> and B<sub>2</sub> 145 $\mu$  long. Tube about 210 $\mu$  long, narrowed apically, terminal setae short 70 $\mu$ , surface with numerous stout setae 30-35 $\mu$  long.

Holotype ♀. NEW ZEALAND : York Bay, 18.xi.1923 (*J. G. Myers*).

**COENOTHRIPS** Bagnall

*Coenothrips* Bagnall, 1924k : 629. Type-species *C. fallax*, by monotypy.

*Eucoenothrips* Bagnall, 1926d : 553, nomen novum for *Coenothrips*.

Bagnall's nomen novum *Eucoenothrips* was unnecessary as *Coenothrips* Bagnall cannot be regarded as a homonym of *Caenothrips* Hood according to the International Code of Zoological Nomenclature, Article 56a. The only species is very close to *Polyphemothrips*, from which it can be distinguished by the small maxillary palps, and the small expanded postocular setae placed laterally and more than twice their length behind the eye.

***Coenothrips fallax* Bagnall**

*Coenothrips fallax* Bagnall, 1924k : 629-630.

Holotype ♀. AUSTRALIA : Victoria, Healesville, *Erythraea australis* flower, 21.xii.1913 (A. E. Shaw & R. Kelly).

**COMPSOTHRIPS Reuter**

*Compsothrips* Reuter, 1901 : 214. Type-species *Phloeothrips albosignata* Reuter, by monotypy.  
*Leurothrips* Bagnall, 1908c : 196. Type-species *L. albomaculata*, by original designation.

The second species, *linearis*, described in *Leurothrips* is now regarded as a synonym of *Liothrips oleae* (Costa).

***Compsothrips albosignatus* (Reuter)**

*Phloeothrips albosignata* Reuter, 1884 : 290.

*Leurothrips albomaculata* Bagnall, 1908c : 196-198.

*Compsothrips albosignatus* (Reuter) ; Priesner, 1964 : 146.

There is no locality given on the type specimens of *albomaculata*, but Priesner states that the species occurs in Southern Europe and Western North Africa.

Holotype ♀ of *albomaculata*. Ex Pascoe Collection, BM 1893-60.

**CRANIOTHRIPS Bagnall**

*Craniothrips* Bagnall, 1915d : 504. Type-species *C. urichi*, by monotypy.

*Craniothrips* Bagnall ; Stannard, 1957 : 39-40.

The praepectus is well developed but the mesopraesternum degenerate in this genus. Antennal segment III bears two slender sense cones, and segment IV bears one short dorsal and two slender lateral sense cones. The pelta is triangular but weakly sclerotized and the abdominal tergites bear two pairs of wing retaining setae. The head and pronotum are figured by Stannard.

***Craniothrips urichi* Bagnall**

*Craniothrips urichi* Bagnall, 1915d : 504-505.

There are six females remaining of the type series in the Bagnall Collection.

LECTOTYPE ♀. TRINIDAD : Capara, *Inga* sp. leaves, viii.1913 (*Urlich*).

***Cryptothrips nigripes* (Reuter)**

*Phloeothrips nigripes* Reuter, 1880 : 11.

*Cryptothrips major* Bagnall, 1911c : 60-61.

*Cryptothrips williamsi* Bagnall, 1933b : 120-121.

*Cryptothrips nigripes* (Reuter) ; Priesner, 1964 : 141.

Bagnall described his two species from uniques, *major* on account of its large size and *williamsi* because of the long pronotal setae.

Holotype ♀ of *major*. NORWAY : Bygdo near Christiana, lime tree leaves, 27.vi.1909 (R.S.B.).

Holotype ♂ of *williamsi*. ENGLAND : Surrey, Merton, on hazel sticks, 16.xii.1912 (C. B. Williams).

### '*Cryptothrips*' *shavianus* Bagnall

*Cryptothrips shavianus* Bagnall, 1918a : 216-217.

This species has a heavy conical tube much as in *Acallurothrips* but it differs from both that genus and *Diplochelaethrips* in having antennal VIII constricted basally. The pronotum has a concave anterior margin but the fore tibiae are not armed as they are in *Pharethrothrips*. A new genus will probably be required when further material becomes available for study.

LECTOTYPE [probably ♀]. AUSTRALIA : Victoria, Healesville, *Acacia linearis* branch with galls, 31.i.1916 (R. Kelly).

### *DACTYLOTHRIPS* Bagnall

*Dactylothrips* Bagnall, 1923c : 629-630. Type-species *D. australis*, by monotypy.

This genus is apparently related to *Adrothrips* Moulton in the shape of the tube, the armed fore tibiae and tarsi, and the absence of postocular setae and fore wing accessory cilia. Abdominal tergites II to IV have two pairs of wing retaining setae, but the lateral abdominal setae of tergites III to VII are borne on bifurcate tubercles which extend medially. The pronotum is not long and only the epimeral setae are well developed.

### *Dactylothrips australis* Bagnall

*Dactylothrips australis* Bagnall, 1923c : 630.

Holotype ♀. AUSTRALIA : Victoria, Healesville, dead *Acacia dealbata*, 17.i.1914 (R. Kelly).

### *DERMOTHRIPS* Bagnall

*Dermothrips* Bagnall, 1910d : 677-678. Type-species *D. hawaiiensis*, by monotypy.

Cuticle largely reticulate. Head longer than broad, sharply constricted basally ; cheek setae arising from tubercles ; postocular setae close to inner posterior margin of eye, about half as long as eye, one pair of postocellar setae rather shorter ; maxillary stylets V-shaped, mouth cone rounded. Pronotal major setae small ; praepectus present, mesopraesternum small. Fore wings when present without accessory cilia, basal wing setae small ; abdominal tergites with two pairs of wing retaining setae. Pelta broad, tube weakly constricted apically.

### *Dermothrips hawaiiensis* Bagnall

*Dermothrips hawaiiensis* Bagnall, 1910d : 678-680.

LECTOTYPE ♀ aptera. HAWAII, MAUI : Haleakala, over 5000 ft., x.1896 (Perkins).

**DICERATOTHRIPS** Bagnall

*Diceratothrips* Bagnall, 1908c : 193. Type-species *D. bicornis*, by monotypy.

*Dichaetothrips* Hood, 1914 : 164-165. Type-species *D. brevicollis*, by monotypy.

*Dichaetothrips* Hood as subgenus, Stannard, 1957 : 96-98.

*Ethiotothrips* Karny, 1925a : 133. Type-species *Liothrips thomasseti* Bagnall, designated by Priesner, 1949 : 129. **Syn. n.**

*Percipiothrips* Ananthakrishnan, 1964 : 72. Type-species *Mesothrips indicus*, by monotypy. **Syn. n.**

The type-species of *Dichaetothrips* has not been seen by the present author, but Stannard has indicated that the Hawaiian *brevicornis* Bagnall is congeneric with *brevicollis*. Stannard has also indicated on a slide in the Bagnall collection that *Ethiotothrips nigricornis* (Bagnall) should be placed in *Diceratothrips*. *Percipiothrips* was described in the Phlaeothripinae but can be recognized as a Megathripine from the broad band-like maxillary stylets arranged as a broad V within the head, and also from the three pairs of long setae on tergite IX of the male. Specimens from Zululand identified by J. C. Faure as *Scotothrips vitreipennis* Priesner also belong on this group. The genus may be redefined as follows:

Head moderately long, almost parallel-sided, often weakly extended in front of eyes, each cheek with a few setae. Maxillary stylets broad and band-like, wide apart in head. Postocellar setae well developed, usually longer than side of ocellar triangle; interocellar setae sometimes long. Postocular setae arise behind inner margin of eyes; vertex usually with one pair of moderately stout setae medially. Antennae eight-segmented, two sense cones on III, and four or five on IV; segment VIII not strongly constricted basally; segments V and VI weakly extended ventrally in some species. Pronotum with five pairs of major setae, epimeral sutures complete; praepectus present, mesopraesternum well developed. Fore tarsus with a large broad-based tooth; fore wing with numerous accessory cilia. Metanotum and pelta reticulate; pelta broad, lateral lobes curve forward slightly away from tergite II. Abdominal tergites each with a single pair of wing retaining setae; tube fairly long, frequently constricted apically, terminal cilia weak.

*Diceratothrips* is here interpreted on a broad basis in order to draw together a group of species which have many characters in common but most of which are known from inadequate material. It is possible that the American species can be separated from the African and Oriental species on the basis of the position of insertion of the antennae and the presence of ventral prolongations on antennals V and VI. However *brevicollis* Hood, the type-species of *Dichaetothrips*, is not known to the present author. The species in which the tube has straight sides may need to be separated, but this character as well as the presence of sculpturing on the tube and the proximity of the maxillary stylets may be affected by the mounting procedure. The African genus *Isopterothrips* is very close to *Diceratothrips* but has very slender lateral lobes to the pelta, only three sense cones on antennal IV, and the mesopraesternum is sexually dimorphic. The differences between the species discussed here are summarized in the following key:

- 1 Intercellar setae longer than postocellars; antennals V and VI with ventral apical prolongation; pelta broad not trilobed; posterolateral angles of mesopraesternum form a right angle. . . . . **armatus** and **bicornis**

-	Not with the above combination of characters ; posterolateral angles of mesoprae- sternum obtuse . . . . .	2
2	Postocellar setae shorter than one side of ocellar triangle . . . . .	3
-	Postocellar setae longer than one side of ocellar triangle . . . . .	5
3	Fore wing with less than 20 accessory cilia ; pronotal anteromarginal setae about half as long as antero-angulars or less ; tube sculptured <i>madagascariensis</i> (and <i>vitreipennis</i> )	
-	Fore wing with about 30 accessory cilia . . . . .	4
4	Tube strongly sculptured ; pelta with slender lateral lobes . . . . .	<i>brevis</i>
-	Tube apparently straight-sided, without sculpture ; pelta broad not trilobed <i>angusticornis</i>	
5	Antennae quite dark, segment IV with five sense cones . . . . .	6
-	At least antennal III yellowish . . . . .	8
6	Seta B <sub>1</sub> on tergite IX about half as long as tube . . . . .	<i>intrepidus</i>
-	Seta B <sub>1</sub> on tergite as long as tube . . . . .	7
7	Fore tibiae as dark as fore femora . . . . .	<i>brevicornis</i>
-	Fore tibiae paler than fore femora . . . . .	<i>thomasseti</i>
8	Fore tarsal claw absent in female . . . . .	9
-	Fore tarsal claw present in female . . . . .	10
9	Antennal IV yellow, sense cones about half as long as segment V . . . . .	<i>difficilis</i>
-	Antennal IV brown distally, sensoria shorter . . . . .	<i>seychellensis</i>
10	Fore wing with about 30 accessory cilia ; sense cones on antennals III and IV about half as long as these segments . . . . .	<i>indicus</i>
-	Fore wing with less than 20 accessory cilia . . . . .	11
11	Tube with straight sides, not sculptured . . . . .	<i>karnyi</i>
-	Tube constricted apically, sculptured as in <i>brevis</i> . . . . .	<i>beesoni</i>

***Diceratothrips angusticornis* (Bagnall) comb. n.**

*Mesothrips angusticornis* Bagnall, 1924k : 638-639.

This species resembles *karnyi* in that the tube has straight sides, but the post-ocellar setae are short and the pelta is not trilobed.

Holotype ♂. CEYLON : Peradeniya, swept from bushes (*E. E. Green*).

***Diceratothrips armatus* Bagnall**

(Text-figs. 25, 34)

*Diceratothrips armatus* Bagnall, 1910a : 385-386.

Bagnall made no attempt to compare this species with the type of the genus. Stannard (1957 : 96) indicates that individuals vary in armature depending on size in this genus, and so Bagnall's reference to 'the strongly characterized fore legs' may be of little value. The species is very close to *bicornis* but appears to have less strongly contrasting dark and light areas on the fore wing, and rather weaker antero-angular pronotal setae.

Syntypes ♂ and ♀. VENEZUELA : La Moka, iii.1891 (*Meinert*).

***Diceratothrips bicornis* Bagnall**

*Diceratothrips bicornis* Bagnall, 1908c : 194-195.

The unique holotype of this species is very similar to *armatus*. The basal half of the fore wing is dark brown in contrast to the hyaline apical half, and the pronotal antero-angular setae are dark and stout.

Holotype ♀. BRAZIL : Santarem, R. Amazon (*Bates*).

***Diceratothrips brevicornis* Bagnall**

(Text-fig. 26)

*Diceratothrips brevicornis* Bagnall, 1910d : 696-698.

The postocellar setae of the unique holotype male are considerably longer than the interocellar setae, contrary to Bagnall's original figure. The species is very close to *thomasseti* but the head seems to be rather more constricted basally and the fore tibiae are quite dark.

Holotype ♂. HAWAII, OAHU : Kawaihoa gulch, iv.1901 (*Perkins* 768).

***Diceratothrips brevis* (Bagnall) comb. n.**

(Text-figs. 24 & 35)

*Adiaphorothrips brevis* Bagnall, 1921b : 276-277.

The unique holotype of this species is very similar to *vitreipennis* Priesner and *madagascariensis* Bagnall, but the specimen lacks antennae and is not in a suitable condition for comparison as it has been badly distorted in mounting. The tube is sculptured, the mesopraesternum quite slender and the maxillary stylets probably formed a narrow V as in the species mentioned above.

Holotype ♂. SEYCHELLES : Mahé [high damp forest between Trois Frères and Morne Seychellois, 1,500-2,000 ft., xii.1908].

***Diceratothrips difficilis* (Bagnall) comb. n.**

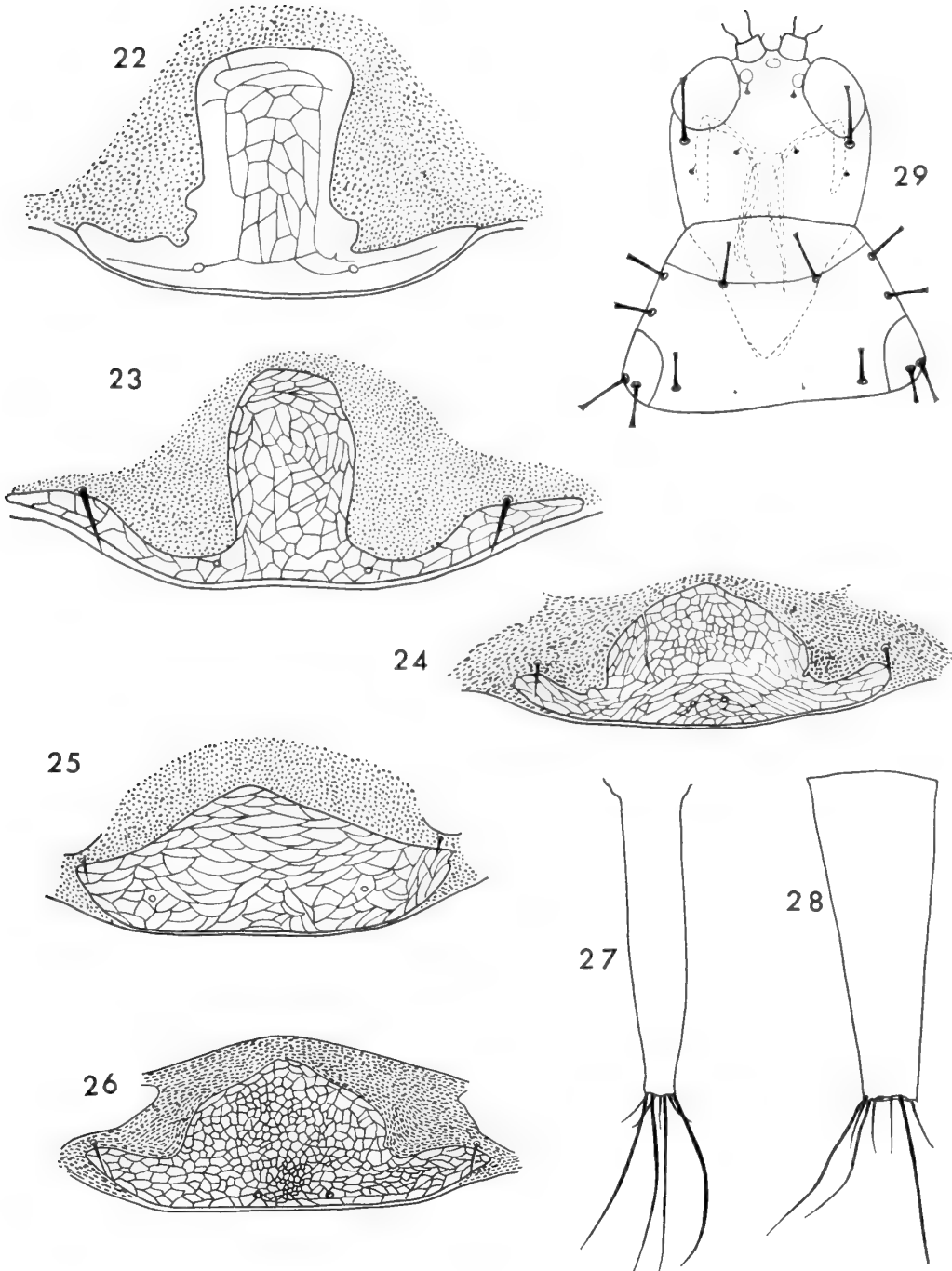
(Text-fig. 40)

*Cryptothrips difficilis* Bagnall, 1921b : 276.

As Bagnall has stated, this species is close to *seychellensis*, and in addition to the characters listed by him, these two differ in the length of the antennal sensoria. In *difficilis* the sensoria are long, those on IV being about half as long as segment V. From *indicus* this species is distinguished by the absence of a fore tarsal tooth in the female.

Holotype ♀. SEYCHELLES : Silhouette, near Mont Pot-à-Eau, 1,500 ft., viii.1908.





Figs. 22-29. Figs. 22-26. Pelta (abdominal tergite I). 22, *Arrhenothrips lewisi*, lectotype female. 23, *Cleistothisrips idolothripoides*, holotype female. 24, *Diceratothrips brevis*, holotype male. 25, *Diceratothrips armatus*, syntype female. 26, *Diceratothrips brevicornis*, holotype male. Figs. 27 & 28. Tube (last abdominal segment): 27, *Diceratothrips thomasetti*. 28, *Diceratothrips karnyi*. Fig. 29. *Eurhynchothrips convergens*, head and pronotum of female paratype to show maxillary bridge.

***Diceratothrips indicus* (Bagnall) comb. n.**

*Mesothrips indicus* Bagnall, 1921c : 365-366.

*Percipiothrips indicus* (Bagnall) Ananthakrishnan, 1964 : 72-74.

The maxillary stylets of the type specimens of *indicus* are broad and band-like, forming a broad V in the middle of the head. Furthermore the male lacks sternal glandular areas and has three pairs of long setae on tergite IX. These characters indicate that the species belongs in the Megathripinae. The length of the post-ocellar setae on the six available specimens varies from 35-60 $\mu$ . The minor seta on the epimeron is about 35 $\mu$  long.

LECTOTYPE ♀. INDIA : Dehra Dun, Thajbra, bark of half-dead 'sal'.

***Diceratothrips intrepidus* (Bagnall) comb. n.**

*Liothrips intrepidus* Bagnall, 1921b : 279.

The unique holotype is rather smaller than *thomasseti* and the major setae of tergite IX, although damaged, are apparently just half as long as the tube.

Holotype ?♀. SEYCHELLES : Silhouette [Mare aux Cochons, ix.1908].

***Diceratothrips karnyi* (Bagnall) comb. n.**

(Text-fig. 28)

*Mesothrips karnyi* Bagnall, 1924k : 639-640.

The tube of *karnyi* has straight sides like *angusticornis* and is not suddenly constricted apically as in *indicus*. However the postocellar setae are long, about 80 $\mu$ . The broad maxillary stylets do not form a wide V but approach each other slightly near the base of the head as in *madagascariensis*. However the surface of the tube is apparently not sculptured. *D. beelsoni* Moulton, also described from Dehra Dun, has a sculptured tube which is constricted apically.

LECTOTYPE ♀. INDIA : Dehra Dun, *Albizia lebbek*, under dead seeds in dead pods.

***Diceratothrips madagascariensis* (Bagnall) comb. n.**

*Cryptothrips madagascariensis* Bagnall, 1936 : 220-221.

This species appears to be close to *Scotothrips vitreipennis* (Priesner) and *brevis* Bagnall in the long sculptured tube which is constricted apically, the shallow mesopraesternum, and the weak postocellar setae. Unfortunately the type-species of *Scotothrips* has not been studied, but *vitreipennis* is possibly a synonym of *madagascariensis*.

Holotype ♀. MADAGASCAR : Ambalamadakana, 1901 (*Alluaud*). Paris Museum.

***Diceratothrips seychellensis* (Bagnall) comb. n.**

*Cryptothrips seychellensis* Bagnall, 1921b : 274-276.

This species and *difficilis* are unusual in the group in lacking a tarsal tooth in the female although this is well developed in the male. The tube bears very faint indications of sculpture near the base.

LECTOTYPE ♂. SEYCHELLES : Mahé [Cascade Estate, 1,000 ft., i-iii.1909].

***Diceratothrips thomasseti* (Bagnall) comb. n.**

(Text-fig. 27)

*Liothrips thomasseti* Bagnall, 1921b : 288-289.

*Liothrips nigricornis* Bagnall, 1921b : 278-279. **Syn. n.**

*Ethirothrips madagascariensis* Bagnall, 1936 : 222. **Syn. n.**

Although *nigricornis* has page priority the present author as first reviser (International Code of Nomenclature, Article 24) uses the name *thomasseti* as that was designated type-species of *Ethirothrips* by Priesner. The length of the antero-angular pronotal setae is  $65\mu$  in the *nigricornis* specimens from Seychelles,  $130\mu$  in the *thomasseti* lectotype, but varies from  $57-105\mu$  in four specimens from New Guinea. The number of accessory fore wing cilia varies from about thirty five to forty five, but the differences in head shape, pronotum and tube length appear to be due to faulty preparation of the original microscope slides. The species is very close to *brevicornis* with which it may prove to be identical.

LECTOTYPE ?♀. RODRIGUES IS. : vii-ix.1918 (*H. J. Snell & H. P. Thomasset*).

LECTOTYPE ?♀ of *nigricornis*. SEYCHELLES : Silhouette [Mare aux Cochons, ix.1908].

Holotype ♀ of *madagascariensis*. MADAGASCAR : Ivondro, 13.vii.1901 (*Alluaud*). Paris Museum.

**DIMORPHOTHRIPS** Bagnall

*Dimorphothrips* Bagnall, 1928b : 58-60. Type-species *D. microchaetus*, by original designation.

Head about twice as long as broad, narrowed behind eyes ; eyes large ; first ocellus on conical projection overlaying base of antennae ; without major setae ; maxillary stylets slender, very low in head ; mouth cone rounded. Antennae eight segmented ; I very large ; sense cones on III to VII long, 1 ; 3 ; 2 ; 2 ; 1 ; respectively. Pronotum broad, eroded laterally, epimeral sutures complete ; epimeral setae long, the other major setae only about twice as long as the minor setae ; praepectus absent, mesopraesternum broad. Mesonotum and metanotum reticulate ; mesonotum eroded only at extreme apex. Fore femora expanded, fore tibiae broad at apex, fore tarsi armed. Mid and hind legs stout. Fore wings with about twenty accessory cilia ; basal setae short and stout. Pelta longer than broad, with elongate reticulations medially. Abdomen, including tube, completely reticulate ; numerous short stout setae laterally. Male sternite VIII with a continuous gland ; setae on tergite IX sexually dimorphic.

***Dimorphothrips microchaetus* Bagnall**

*Dimorphothrips microchaetus* Bagnall, 1928b : 60-61.

*Dimorphothrips solitus* Bagnall, 1928b : 61-62. **Syn. n.**

Bagnall regarded the unique holotype of *microchaetus* as a male, but the internal rod of segment IX found in females of the Phlaeothripidae is clearly present. As the two specimens on which *microchaetus* and *solitus* were based were apparently taken together, it can be assumed that they are the female and male of the same species.

Holotype ♀. TONGA : Nukualop, leaves of *Ficus*, 20.ii.1925 (*Buxton & Hopkins*).

Holotype ♂ of *solitus*. TONGA : Nukualop, leaves of *Ficus*, 20.ii.1925 (*Buxton & Hopkins*).

**DINOTHRIPS Bagnall**

*Dinothrips* Bagnall, 1908c : 190-191. Type-species *D. sumatrensis*, by monotypy.

*Dinothrips* Bagnall ; Priesner, 1959 : 52-59.

*Dinothrips* Bagnall ; Ananthakrishnan, 1964 : 88-90.

***Dinothrips sumatrensis* Bagnall**

*Dinothrips sumatrensis* Bagnall, 1908c : 191-192.

*Dinothrips affinis* Bagnall, 1915c : 270-271. **Syn. n.**

*Dinothrips celebensis* Bagnall, 1934b : 485-487. **Syn. n.**

The material upon which *affinis* apparently was based is mounted on cards with typical specimens of *sumatrensis*, as referred to by Bagnall in the original description, although none of this material is named. However the collection data is identical with that given in the original publication. In two specimens which have antennal III only narrowly shaded at base and apex, the length of this segment varies from 375 $\mu$  to 400 $\mu$ . In two specimens in which antennal III is more extensively shaded the length varies from 350 $\mu$  to 280 $\mu$ . These differences are here interpreted as individual variation, and moreover the *celebensis* holotype is regarded as a small male of *sumatrensis*. The type series of *sumatrensis* is not in the British Museum (Natural History) and the published data were: 'Several examples of both sexes and in all stages [not carded-p. 183], SUMATRA, Amsterdam Museum'.

Syntypes ♂♂ and ♀♀ of *affinis*. SARAWAK : Mt. Matang, on dead tree, xii.1913 (*G. E. Bryant*).

Holotype ♂ of *celebensis*. CELEBES : (*Savinière*). Paris Museum.

**DOCESSISSOPHOTHrips Bagnall**

*Docessissophothrips* Bagnall, 1908c : 201-202. Type-species *D. ampliceps*, by monotypy.

*Egchocephalothrips* Bagnall, 1916b : 408. Type-species *Docessissophothrips monstrosus*, by monotypy. **Syn. n.**

As Stannard has indicated, this genus is very similar to *Polyphemothrips* Schmutz, although it is possibly not monophyletic. The structure of the thoracic sternites is

not visible in the holotype of *ampliceps* but both *monstrosus* and *laticeps* have the praepectus and mesopraesternum well developed. Bagnall placed *monstrosus* in a separate genus on account of the extreme elevation of the dorsal surface of the head. This appears to be unnecessary in view of the variation within the genus. There are two pairs of long postocular setae and the concentric lines of sculpture on the anterior half of the metanotum are similar in *ampliceps* and *monstrosus*.

***Docessissophothrips ampliceps* Bagnall**

*Docessissophothrips ampliceps* Bagnall, 1908c : 202-203.

The pelta of the unique male is not clear but is apparently triangular. Both this sclerite and the metanotum are reticulate. The median pair of metanotal setae are small and lie just posterior to the concentric reticulations, which are at the anterior end of the sclerite. The fore wings have about thirty accessory cilia and there are two pairs of wing retaining setae on each abdominal tergite.

Holotype ♂. [MEXICO ?] Orizaba, xii.1887 (*H.S. & F.D.G.*).

***Docessissophothrips frontalis* Bagnall**

*Docessissophothrips frontalis* Bagnall, 1914b : 26-27.

The unique holotype of *frontalis* is not in the Bagnall Collection. The specimen was collected in Japan by J. E. A. Lewis, and Bagnall gives a figure of the head viewed laterally.

***Docessissophothrips laticeps* Bagnall**

*Docessissophothrips laticeps* Bagnall, 1915a : 322-323.

Although reduced ocelli are present, the female holotype is apparently apterous. The praepectus and mesopraesternum are well developed, the pelta very broad basally, and both the pelta and metanotum are devoid of sculpture. The postocellar setae are long, almost reaching the base of antennal II. There are two sense cones on antennal III and three on IV.

Holotype ♀. SARAWAK : Mt. Matang, under bark with termites, 28.i.1914 (*G. E. Bryant*).

***Docessissophothrips longiceps* Bagnall**

*Docessissophothrips longiceps* Bagnall, 1916b : 407-408.

The pronotum of this species is emarginate anteriorly and as in *monstrosus*, lacks anteromarginal setae. The fore tarsus is unarmed, the metanotum reticulate, and the pelta divided into a large quadrate median sclerite and a pair of small lateral plates. The surface of the tube is reticulate in contrast to the other members of the genus. The ocelli are very reduced but there is a pair of stout interocellar setae.

Holotype ♀. MADEIRA : (*Wollaston*). BM 1858 : 21.

***Docessissophothrips major* Bagnall***Docessissophothrips major* Bagnall, 1912a : 215.

This species is probably fairly close to *ampliceps*. The pelta and metanotum are reticulate and the postocellar setae well developed. There are about seventy accessory cilia on the fore wing, and the hind wing has about eight stout recurved setae basally apparently for attaching it to the fore wing.

Holotype ♀. Without data.

***Docessissophothrips monstrosus* Bagnall comb. rev.***Docessissophothrips monstrosus* Bagnall, 1909j : 538-539.*Egchocephalothrips monstrosus* (Bagnall) Bagnall, 1916b : 408.

This species is here regarded as an extreme form within the genus *Docessissophothrips*. The head is much expanded dorsally, and the pronotum deeply emarginate anteriorly as a result. There are only two pairs of major setae on the pronotum, the posteromarginals and the epimerals. There is a pair of large setal bases on the metanotum at the centre of a series of concentric rings of reticulation, and the pelta is broad basally and reticulate. Only one of the pairs of wing retaining setae is well developed on each tergite, the anterior pair being weak with the setae usually straight. The praepectus and mesopraesternum are well developed, but unfortunately the specimen is badly damaged and parts are missing.

Holotype (sex unknown). NEW CALEDONIA : Mt. Kogin (*A. Faurel*).

**DOLICHOLEPTA Priesner stat. n.**

*Dolichothrips* subgenus *Dolicholepta* Priesner, 1932b : 198. Type-species *Dolichothrips giraffa* Karny (synonym of *micrurus* Bagnall), by original designation.

This genus resembles *Dolichothrips* in having the praepectus present, mesopraesternum degenerate medially, elongate mouth cone, triangular pelta, abdominal tergites with more than two pairs of wing retaining setae, and sternites with the median pair of marginal setae much longer than the submedian pair. It is to be distinguished from *Dolichothrips* by the lack of accessory cilia on the fore wing, the elongate antennal III which bears only two small sense cones, the extension of the inner apical margin of antennals IV, V and VI, and the closely striate sculpture on the metanotum. *Macrophthalmothrips scotti* Morison, 1958 belongs in this genus (**comb. n.**) and may be a large specimen of *jeanneli*. The four species known to the present author may be distinguished as follows:

- |    |   |                                |
|----|---|--------------------------------|
| 1  | Pronotum with numerous transverse lines of sculpture ; eyes not extended on ventral surface of head, or only very weakly so ; pelta weakly reticulate . . . | 2                              |
| -- | Pronotum without any sculpture ; eyes strongly extended on ventral surface of head ; pelta strongly reticulate . . . . .                                    | 3                              |
| 2  | Pronotal midlateral setae not developed ; postocular setae slender  | <b><i>micrurus</i> Bagnall</b> |

- Pronotal midlateral setae stout, broadly expanded apically, about equal to epimerals (70 $\mu$ ) ; postocular setae at least twice as long as their separation from hind margin of eye . . . . . **nigripes** Bagnall
- 3 Mid dorsal setae of head long, extending to base of postocular setae . . . . . **scotti** Morison
- Mid dorsal setae of head small, not reaching base of postoculars . . . . . **jeanneli** Bagnall

***Dolicholepta jeanneli* (Bagnall) comb. n.**

*Dolichothrips jeanneli* Bagnall, 1921c : 358-359.

*Dolichothrips karnyi* Faure, 1925 : 153-158. **Syn. n.**

*D. karnyi* has been reported to differ from *jeanneli* in having longer setae on tergite IX. From a study of material collected in Kenya it is apparent that this species varies considerably in overall size, and the median setae on tergite IX may be rather shorter or rather longer than the tube. The species is known from Kenya, Uganda, Tanganyika and Transvaal.

LECTOTYPE ♀. KENYA : Molo, Mau Escarpment, 8.xii.1911 (*Alluaud & Jeannel*).

***Dolicholepta micrurus* (Bagnall)**

*Liothrips micrurus* Bagnall, 1914c : 292-293.

*Dolichothrips (Dolicholepta) micrurus* (Bagnall) Priesner, 1965 : 417-420.

The original description refers to a unique female but there are two specimens in the Bagnall Collection bearing the original data. The species is known from Egypt, Sudan and Seychelles Islands, although the latter record is based on a fragmentary specimen.

LECTOTYPE ♀. EGYPT : Matarieh, near Cairo, *Zyziphus*, 9.ix.1911 (*F. C. Willcocks*).

***Dolicholepta nigripes* (Bagnall) comb. n.**

*Dolichothrips nigripes* Bagnall, 1936 : 223.

Although the unique holotype is in a very bad condition it is clearly more closely related to *micrurus* from the Nile valley than to the East African *jeanneli*. The other species described from near Addis Ababa in Ethiopia, *scotti* Morison, is however close to *jeanneli*.

Holotype ♀. [? ETHIOPIA : between Addis Ababa and Ankober] Ethiopie méridionale, près riviére Golba, under bark of *Makanissa*, 3.viii.1904 (*Rothschild*). Paris Museum.

***DOLICHOTHRIPS* Karny**

*Dolichothrips* Karny, 1912d : 299. Type-species *D. longicollis* Karny, by monotypy.

The subgenus *Dolicholepta* is here recognized as a full genus. Several of the species treated here under *Dolichothrips* were described in *Neoheegeria*, and these two

genera are probably related. *N. dalmatica* and *D. longicollis*, the type-species of these genera both have the praepectus present, mesopraesternum degenerate medially, three sense cones on antennal III, elongate mouth cone and duplicated wing cilia. They may be distinguished by the presence in *Dolichothrips* of three or more pairs of setae on the abdominal tergites anterolateral to the two pairs of wing retaining setae. Some of these setae are developed as additional wing retaining setae, whereas in *Neoheegeria* there are two pairs of wing retaining setae. The following key includes those species represented in the British Museum (Natural History) by type material, and in addition *gracilipes* R. & M. of which the author has examined specimens determined by Professor T. N. Ananthakrishnan. It should be noted that *D. citricruris* Moulton, 1949 does not belong in *Dolichothrips*.

- |   |   |   |
|---|---|---|
| 1 | Prothoracic midlateral setae very small; antero-angular setae close to antero-marginals . . . . .   | <i>longicollis</i> Karny                                      |
| – | Prothoracic midlaterals not much smaller than the other major setae . . . . .   | 2   |
| 2 | Legs yellow; metanotal setae stout with expanded apices, similar to pronotal major setae . . . . .  | <i>ochripes</i> Karny   |
| – | At least femora brown; metanotal setae slender. . . . .   | 3   |
| 3 | Basal wing setae small, less than the distal width of the fore wing in length   | <i>indicus</i> Hood = <i>rambhutanae</i> Anan. <b>syn. n.</b> |
| – | Basal wing setae longer than the distal width of fore wing . . . . .  | 4   |
| 4 | All tibiae yellow . . . . .   | <i>citripes</i> Bagnall                                       |
| – | Mid and hind tibiae brown . . . . .   | 5   |
| 5 | Tergite IX with seta B <sub>1</sub> about as long as tube; pronotal postero-angular setae less than twice as long as anteromarginals; basal wing seta 2 softly pointed not expanded apically. . . . . | <i>varipes</i> Bagnall  |
| – | Tergite IX setae distinctly longer than tube; postero-angular setae more than twice as long as anteromarginals . . . . .  | 6   |
| 6 | Pronotal postero-angular setae three times as long as anteromarginals; fore wing with nine accessory cilia . . . . .  | <i>fumipennis</i> Bagnall                                     |
| – | Pronotal postero-angular setae twice as long as anteromarginals; fore wing with twelve or more accessory cilia. . . . .   | <i>zyziphi</i> Bagnall  |

### *Dolichothrips citripes* (Bagnall) **comb. n.**

*Neoheegeria citripes* Bagnall, 1921c : 360–361.

*Dolichothrips* (*Dolicholepta*) *gracilipes* Ram. & Marg., 1939 : 46. **Syn. n.**

The original description of *gracilipes* states that the antennae are shorter than in *citripes*, but the length of the antennal segments is quite variable in three specimens in the British Museum (Natural History) collection determined as *gracilipes* by Professor Ananthakrishnan. Bagnall described his species on one female and one damaged male. The published host plant is probably an error for *Abutilon indicum* as this is the host plant of *gracilipes* in Orissa and Madras.

LECTOTYPE ♀. INDIA : Pusa, on *Alentillon indicum*, 12.X.1909 (C. S. Misra).



***Dolichothrips fumipennis* (Bagnall) comb. n.**

*Neoheegeria fumipennis* Bagnall, 1921c : 360.

This species, known only from the unique holotype, is very similar to *zyziphii*, from which it can be distinguished by the longer setae on the posterior margin of the pronotum.

Holotype ♀. INDIA : Kurseong, East Himalayas, 4,700 ft., 26.iii.1910 (*F. Gravely*).

***Dolichothrips varipes* Bagnall**

*Dolichothrips varipes* Bagnall, 1921c : 359.

This species is in many ways intermediate between the two genera *Dolichothrips* and *Dolicholepta*. Although the metanotal reticulations are rather narrow, the sculpture is distinct from the close striations found on the metanotum of *Dolicholepta*. Antennal segments IV, V and VI are only weakly extended on the inner apical margin in *varipes* and there are five or more accessory cilia on the fore wing. This species is known from India, Egypt and Sudan, and the present author has also examined a specimen from Ethiopia.

Syntypes ♀. INDIA : [? Coimbatore] (*Ramakrishna*).

***Dolichothrips zyziphii* (Bagnall) comb. n.**

*Neoheegeria zyziphii* Bagnall, 1923c : 629.

Three females and two males bearing no data other than the name and registration number 186 remain in the Bagnall Collection. The original description refers only to 'several examples'.

LECTOTYPE ♂. [INDIA : Paresnoth, W. Bengal, at 4,400 ft., on *Zyziphus rugosus*, 10.iv.1909.] Reg. 186.

**ECACANTHOTHrips Bagnall**

*Ecacanthothrips* Bagnall, 1909c : 348. Type-species *Acanthothrips sanguineus*, by monotypy.

***Ecacanthothrips sanguineus* (Bagnall)**

*Acanthothrips sanguineus* Bagnall, 1908b : 362.

*Ecacanthothrips bryanti* Bagnall, 1915a : 320-321.

*Ecacanthothrips coxalis* Bagnall, 1915b : 597.

*Ecacanthothrips coxalis* var. *consanguineus* Priesner, 1930 : 367-368. **Syn. n.**

*Ecacanthothrips flavipes* Bagnall, 1915b : 597.

*Ecacanthothrips sanguineus* Bagnall ; Ananthakrishnan, 1961 : 275-280.

The unique holotype of *sanguineus* is a female and not a male as originally stated, and the figures of the fore tibiae of *bryanti* and *sanguineus* are inaccurate in that the original specimens have tibial tubercles. In addition to the characters studied by

Ananthkrishnan, it has been observed that the second (lateral) pair of postocular setae are usually acute in the female but expanded apically in the male, and the third sub-basal wing seta is acute in the male but expanded in the female. A paratype female and male of *consanguineus* have been examined.

Holotype ♂. NEW GUINEA : Dorey. (*Wallace*).

LECTOTYPE ♂ of *bryanti*. SARAWAK : Matang, 1,000 ft., on dead tree, 17.xii.1913 (*G. E. Bryant*).

LECTOTYPE ♂ of *coxalis*. SARAWAK : Mt. Matang, 1,000 ft., 2.ii.1914 (*G. E. Bryant*).

LECTOTYPE ♂ of *flavipes*. SARAWAK : Matang, 1,000 ft., in white flower, 3.xii.1913 (*G. E. Bryant*).

### *Ecacanthothrips spinipes* (Bagnall) **comb. n.**

*Phloeothrips spinipes* Bagnall, 1908c : 195-196.

There are about fourteen sensoria on antennal III of the unique female holotype of this species. From *sanguineus* it can be distinguished by the shorter head, unarmed femora, and broader reticulations laterally on the pelta. The postocular seta has a widely expanded assymetric apex and almost reaches the base of the antenna. The fore wings are damaged but there are probably more than twenty accessory cilia.

Holotype ♀. NEW GUINEA : Dorey (*Wallace*).

### **EIDOTHRIPS** Bagnall

*Eidothrips* Bagnall, 1918a : 219. Type-species *E. alluaudi*, by monotypy.

This genus is distinguished from the others in the *Bactrothrips* group by the presence of lateral processess on abdominal segments five and six in the male and the absence of processes from segments seven and eight. The spiracles on segment eight are small and round as in *Bactridothrips*, *Bactrianothrips* and *Cervothrips*.

### *Eidothrips alluaudi* Bagnall

*Eidothrips alluaudi* Bagnall, 1918a : 219-220.

The internal epimeral seta is very small and the base of antennal III is shaded although the rest of the segment is pale. Moulton (1930b : 416) has recorded females of this species from Zululand. The type locality is in Kenya not Uganda as stated originally.

LECTOTYPE ♂. KENYA : Kijabe, Kikuyu Escarpment, xii.1911 (*Alluaud & Jeannel*).

**ELAPHROTHRIPS** Buffa

*Elaphrothrips* Buffa, 1909 : 162-163. Type-species *Idolothrips coniferarum* Pergande, 1896, designated by Andre, 1940.

*Dicaiothrips* Buffa, 1909 : 169-170. Type-species *Thrips schotti* Heeger, 1852, designated by Bagnall, 1910a.

*Elaphoxothrips* Bagnall, 1932e : 516-517. Type-species *Kleothrips athletes* Karny, by monotypy.

*Klinothrips* Bagnall, 1918a : 217-218. Type-species *K. femoralis*, by monotypy.

*Elaphrothrips* Buffa ; Priesner, 1935 : 58-60 and 1952 : 845-866.

*Elaphrothrips* Buffa ; Stannard, 1957 : 98-100.

This genus has been confused frequently with *Idolothrips*, and Stannard states that the differences between the two genera are 'of a minor nature'. The type-species of *Idolothrips* has been compared during the present study with more than fifty species of *Elaphrothrips* and these two genera may be distinguished as follows:

- |   |   |                      |
|---|---|----------------------|
| 1 | Pronotal antero-angular and midlateral setae close together, anteromarginals well developed, two pairs of epimerals present ; fore tarsi unarmed in both sexes ; external margin of femora angular in profile, bearing several pairs of major setae as in <i>Meiothrips</i> . . . . . | <b>IDOLOTHRIPS</b>   |
| - | Pronotal antero-angular and midlateral setae not close together, anteromarginals small, one pair of major epimerals. Fore tarsi frequently armed ; fore femora expanded, external margin with a smoothly curved profile. . . . .  | <b>ELAPHROTHRIPS</b> |

The difficulties in this genus have been greatly increased through the description of numerous species on solitary specimens or very short series. Bagnall's species were described before the principle of heterogonous growth in Thysanoptera was appreciated, and in view of the variation in *Elaphrothrips* species discussed by Priesner (1935), Hartwig (1948) and Hood (1955) it is likely that more synonymy awaits elucidation. The colour of the antennal segments is frequently used for species recognition within the group, but in certain species such as *E. stenocephalus* (and *Idolothrips spectrum*) the stems of antennals IV to VI are not constant in colour although variation from clear yellow to pure brown has not been observed. The variation involved is in the shades of yellowish brown and brownish yellow, and forms with this intermediate colouring need special attention.

***Elaphrothrips aethiopiae*** Bagnall

*Elaphrothrips aethiopiae* Bagnall, 1936 : 225-226.

*Elaphrothrips aethiopiae* Bagnall ; Priesner, 1952 : 865.

Holotype ♂. [? ETHIOPIA] Ethiopie meridionale, Abou, 31.vii.1904 (*Rothschild*). Paris Museum.

***Elaphrothrips affinis*** (Bagnall)

*Idolothrips affinis* Bagnall, 1908c : 213-214.

*Idolothrips assimilis* Bagnall, 1908c : 213. **Syn. n.**

*Dicaiothrips distinctus* Bagnall, 1910a : 378-379. **Syn. n.**

Bagnall described these three forms from three uniques which bear identical collection data. In view of the variation now known in *Elaphrothrips* species from

South America (Hood, 1955), it appears reasonable to treat the slender differences between these three specimens as variation within one species. The postocular setae of the male (*distinctus*) are small, whereas these setae are well developed in the two females (*affinis* and *assimilis*). The stems of antennals III to V are yellow, although IV and V have a dark basal ring.

Holotype ♀. NICARAGUA : Chontales (*Jansen*).

Holotype ♀ of *assimilis*. NICARAGUA : Chontales (*Jansen*).

Holotype ♂ of *distinctus*. NICARAGUA : Chontales (*Jansen*).

### *Elaphrothrips angustatus* (Bagnall)

(Text-fig. 31)

*Idolothrips angustatus* Bagnall, 1910a : 380-382.

Bagnall's records of *brevicornis* from Trinidad (1915) and St. Vincent (1917) are here regarded as mis-identifications of *angustatus*. The anterior reticles of the pelta are equiangular but the reticles on the posterior half are transversely elongate. The postocular setae of the male are small although these setae are long in the female.

Holotype ♂. VENEZUELA : Los Trincheras, 11.xii.1891 (*Meinert*).

### *Elaphrothrips antennalis* Bagnall

*Elaphrothrips (Idolothrips) antennalis* Bagnall, 1921d : 398.

The fore tarsus of this species bears a broad-based tooth rather similar to that found in the minor males of *procer* Schmutz.

Holotype ♂. JAPAN : Kobe, on grass, 11.vii.1916 (*J. E. A. Lewis*).

### *Elaphrothrips bagnallianus* Priesner

*Elaphrothrips bagnallianus* Priesner, 1952 : 863. Nomen novum for *clarispinis* of Bagnall.

*Elaphrothrips clarispinis* Bagnall, 1935a : 134-135, nec *clarispinis* Priesner, 1935 : 247.

Holotype ♂. [ZAMBIA] : Kipushi, Congo Border, in dry dead leaves, 9.xi.1928 (*H. S. Evans*).

### *Elaphrothrips brachypes* Bagnall

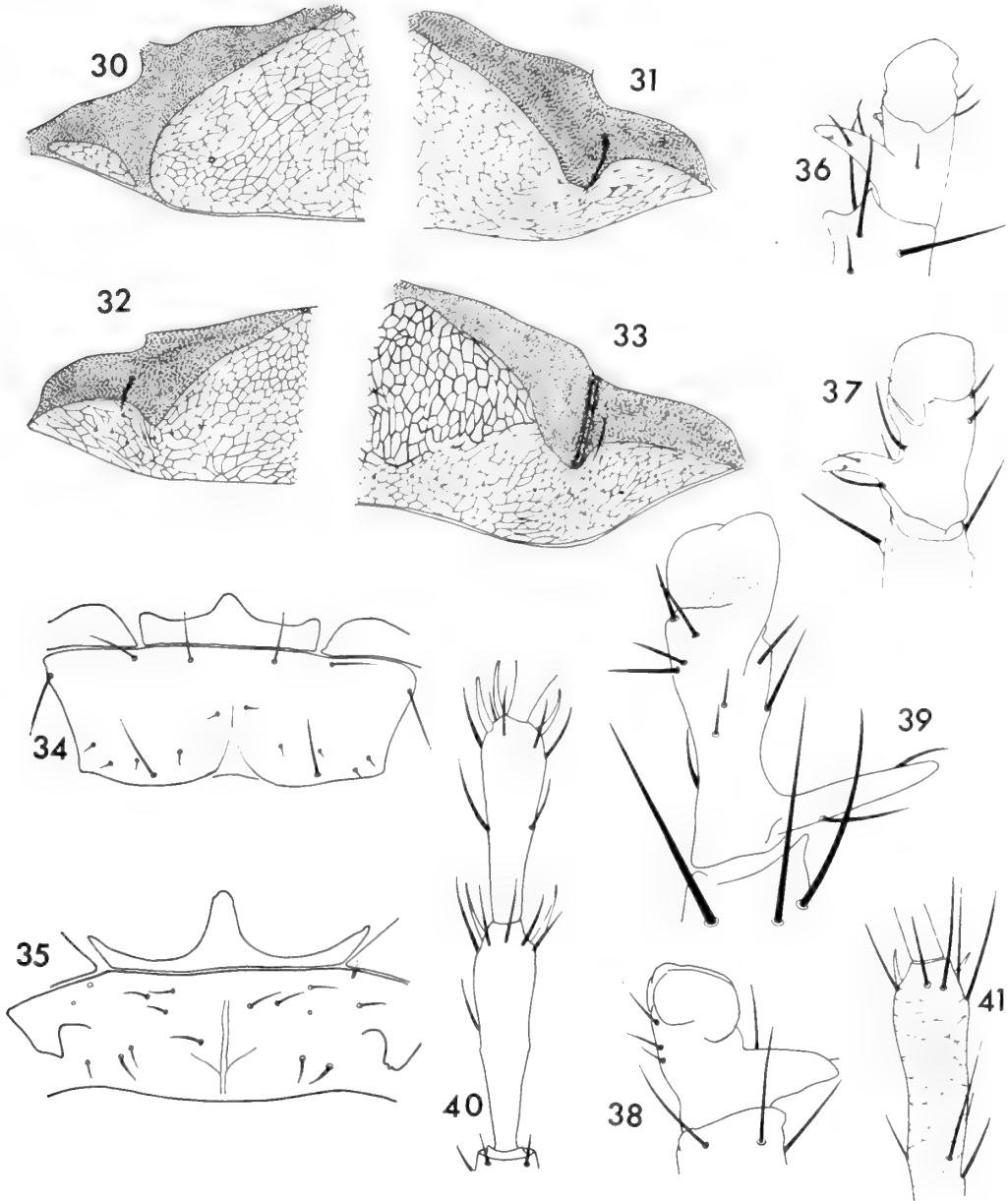
*Elaphrothrips brachypes* Bagnall, 1934b : 495-497.

*Elaphrothrips jeanneli* Bagnall, 1935a : 140-142. **Syn. n.**

In this species the postocular and interocellar setae are colourless, and the pronotal and femoral setae are shaded yellow. The extreme base of the femora and tibiae are yellow, and the hind tibiae are light brown in the distal half.

Holotype ♂. EAST AFRICA : without data.

Holotype ♀ of *jeanneli*. [KENYA] : Molo, Mau Escarpment, 7,000 ft., 2.xii.1911 (*Alluaud & Jeannel*).



FIGS. 30-41. Figs. 30-33. Half of pelta of *Elaphrothrips* species (first abdominal tergite) : 30, *E. crassiceps*, holotype female. 31, *E. angustatus*, holotype male. 32, *E. brevicornis*, holotype female. 33, *E. foveicollis*. Figs. 34 & 35. Mesosternum of *Diceratothrips* species : 34, *D. armatus*. 35, *D. brevis*. Figs. 36-39. Fore tarsus of *Elaphrothrips* species males : 36, *E. longiceps*. 37 & 38, *E. procer* (37, *approximatus*, 38, *proximus*). 39, *E. greeni* (*bouvieri* holotype). Fig. 40. *Diceratothrips difficilis*, antennals III & IV of holotype female. Fig. 41. *Anactinothrips meinerti*, apex of antennal III of holotype female.

***Elaphrothrips brachyurus*** Bagnall

*Elaphrothrips brachyurus* Bagnall, 1926d : 555.

Holotype ♀. SOUTH AFRICA : Pondoland, Port St. John, iv.1923 (*R. E. Turner*).

***Elaphrothrips breviceps*** (Bagnall)

*Dicaiothrips breviceps* Bagnall, 1921d : 399-400.

*Elaphrothrips breviceps* (Bagnall) Bagnall, 1935a : 143-145.

The interocellar setae are colourless in this species although the epimeral setae are shaded and the lateral head setae dark. On tergite IX of the unique holotype setae  $B_1$  are missing, but  $B_3$  are apparently only 0.7 as long as  $B_2$ . The antennae are not known, but the lateral lobes of the pelta are very slender. A second species is mounted on the same slide as the holotype.

Holotype ♀. [KENYA] : Nairobi (Wa-Kikuyu et Masai), 1904 (*Alluaud*).

***Elaphrothrips brevicornis*** (Bagnall)

(Text-fig. 32)

*Dicaiothrips brevicornis* Bagnall, 1910a : 379-380.

Bagnall's records of this species from Trinidad and St. Vincent are referred to under *angustatus*.

Holotype ♀. VENEZUELA : Los Trincheras, 12.xii.1891 (*Meinert*).

***Elaphrothrips brunneipennis*** Bagnall

*Elaphrothrips brunneipennis* Bagnall, 1935a : 130-132.

*Elaphrothrips brunneipennis* Bagnall ; Priesner, 1952 : 859.

LECTOTYPE ♀. SAN THOMÉ : 6.xi.1932 (*W. H. T. Tams*).

***Elaphrothrips conicurus*** Bagnall

*Elaphrothrips conicurus* Bagnall, 1934b : 497-498.

Holotype ♀. VENEZUELA : Sarare, 1899 (*F. Geay*). Paris Museum.

***Elaphrothrips coronatus*** Bagnall

*Elaphrothrips coronatus* Bagnall, 1934c : 630-632.

This species can apparently be distinguished from the other Indo-Malayan species by the produced part of the head being narrowed apically, and antennals III to V with very pale brown shadings apically.

Holotype ♀. CEYLON : Peradeniya, on banana, 2.vi.1913 (*A. Rutherford*).

***Elaphrothrips crassiceps*** (Bagnall)

(Text-fig. 30)

*Dicaiothrips crassiceps* Bagnall, 1921d : 399.*Elaphrothrips crassiceps* (Bagnall) ; Priesner, 1934 : 197.

Apart from the short broad head, this species may also be recognized by the fact that the lateral lobes of the pelta are quite separate from the large median plate.

Holotype ♀. BURMA : Myawadli, 900 ft., 24-26.xi.1911 (*F. H. Gravelly*).

***Elaphrothrips denticollis*** (Bagnall)*Dicaiothrips denticollis* Bagnall, 1909j : 527.

This species is known from a single female, but comparison with the description of *mucronatus* Priesner, 1935 : 167-168 suggests that these two forms may eventually be shown to be identical.

Holotype ♀. INDONESIA : Isle of Nias (*K. Jordan*).

***Elaphrothrips distans*** Bagnall*Elaphrothrips distans* Bagnall, 1935a : 132-134.*Elaphrothrips distans* Bagnall ; Priesner, 1952 : 859.

Holotype ♀. TANGANYIKA : Morogoro, iii.1925 (*A. H. Ritchie*).

***Elaphrothrips femoralis*** (Bagnall)*Klinothrips femoralis* Bagnall, 1918a : 218-219.*Elaphrothrips (Klinothrips) femoralis* (Bagnall) Priesner, 1952 : 846-849.

The specimen on which this species was described (in spirit) has not been located in the British Museum (Natural History). The published data were; GHANA : Aburi, Cacao leaves, 12.ix.1915 (*W. H. Patterson*). Priesner has redescribed the species from two males from the Ivory Coast and one of these is deposited in the Paris Museum. The basal wing setae of this specimen are dark as in *gaboniensis*.

***Elaphrothrips foveicollis*** (Bagnall)

(Text-fig. 33)

*Idolothrips foveicollis* Bagnall, 1908c : 214-215.*Dicaiothrips championi* Bagnall, 1910a : 375. **Syn. n.***Dicaiothrips grandis* Bagnall, 1910a : 373-374. **Syn. n.**

This species belongs in the *laevicollis* group in which the anterior reticles of the pelta are distinguished from those at the posterior by their thicker margins, and the postocular setae of the males are negatively heterogonous (see Hood, 1955 : 54).

The holotype of *championi* is a female, not a male as originally stated, the internal rod in abdominal segment IX is visible, the fore tarsal claw is short and broad, and the postocular setae are long. The holotype of *grandis* is here regarded as a major male of *foveicollis*.

LECTOTYPE ♀. [GUATEMALA : 14° 44' N. 91° 27' W] Cerro Zunil, 4-5,000 ft., (*Champion*).

Holotype ♀ of *championi*. [GUATEMALA : 14° 44' N. 91° 27' W] : Cerro Zunil, 4-5,000 ft., (*Champion*).

Holotype ♂ of *grandis*. [GUATEMALA : 14° 44' N. 91° 27' W] : Cerro Zunil, 4-5,000 ft., (*Champion*).

### *Elaphrothrips gaboniensis* Bagnall

*Elaphrothrips gaboniensis* Bagnall, 1936 : 224-225.

*Elaphrothrips gaboniensis* Bagnall ; Priesner, 1952 : 860.

The specimen recorded by Bagnall (1935a : 140) from Ibadan, NIGERIA has the third basal wing seta very darkly shaded. The epimeral setae are colourless, the femoral setae weakly shaded, and the head setae dark.

Holotype ♀. CONGO : Libreville (*J. Chalot*). Paris Museum.

### *Elaphrothrips graveleyi* Bagnall

*Elaphrothrips graveleyi* Bagnall, 1934c : 628-630.

Holotype ♀. INDIA : Kurseong, 4,700 ft., 26.iii.1910 (*F. H. Graveley*).

### *Elaphrothrips greeni* (Bagnall)

(Text-fig. 39)

*Dicaiothrips greeni* Bagnall, 1914c (March) : 289-290.

*Dicaiothrips bouvieri* Vuillet, 1914 (April) : 276-277. **Syn. n.**

The above synonymy is based on a comparison of the type and paratype of *bouvieri* with a third specimen from the same locality and the remains of the holotype of *greeni*. The basal stems of antennals IV and V apparently vary in colour from brownish yellow to pale brown (cf. Priesner 1934 : 195), and as in many other species, the sickle-shaped seta on the fore femur varies in degree of development. The fore tarsal tooth is long and slender, arising basally, and the hind tibia is yellowish in the distal half.

Holotype ♂. CEYLON : Peradeniya, on decayed *Phaseolus* pods (*E. E. Green*).

Holotype ♂ of *bouvieri*. INDIA : Coonoor, Nilgiri Hills, 6,000 ft., 14-31.vii.1901 (*Maindrón*).



***Elaphrothrips laevicollis*** (Bagnall)

*Dicaiothrips laevicollis* Bagnall, 1910a : 375-376.

*Elaphrothrips laevicollis* (Bagnall) ; Hood, 1955 : 54.

The two syntypes are not in the British Museum nor the University Museum, Copenhagen. The original data were ; VENEZUELA : Los Tejes, 20.ix.1891 (*Meinert*). One male identified as this species by Bagnall from Trinidad has been examined and this is very close to *foveicollis*. Hood gives an account of the heterogony exhibited by the males.

***Elaphrothrips laticeps*** Bagnall

*Elaphrothrips laticeps* Bagnall, 1935a : 142-143.

*Elaphrothrips laticeps* Bagnall ; Priesner, 1952 : 862.

The unique holotype is damaged, but antennal III is clear yellow and IV weakly shaded apically. This should be compared with *uniformis* Buffa in which both III and IV are yellow.

Holotype ♀. TANGANYIKA : Moschi, 1905.

***Elaphrothrips longiceps*** (Bagnall)

(Text-fig. 36)

*Idolothrips longiceps* Bagnall, 1908c : 211-213.

The unique holotype has a well developed, dark sickle-shaped seta on the fore femur. The inner apical margin of the fore tibia bears a distinct tooth, and the fore tarsus is rather short with a broad-based, claw-shaped tooth.

Holotype ♂. [MEXICO] : Orizaba, xii.1857 (*H.S. & F.D.G.*).

***Elaphrothrips madagascariensis*** Bagnall

*Elaphrothrips madagascariensis* Bagnall, 1935a : 138-140.

*Elaphrothrips madagascariensis* Bagnall ; Priesner, 1952 : 865.

Holotype ♀. MADAGASCAR : Ambalamadakana, 1901 (*Alluaud*). Paris Museum.

***Elaphrothrips mahensis*** (Bagnall)

*Dicaiothrips mahensis* Bagnall, 1921b : 283-284.

*Dicaiothrips rex* Bagnall, 1921b : 281-283. **Syn. n.**

*Dicaiothrips hystrix* Bagnall, 1921b : 284-286. **Syn. n.**

Although the name *rex* has page priority, the present author as first reviser (International Code, 1961 : 24A) uses *mahensis*, because the holotype bearing that name is in good condition whereas the holotype of *rex* is crushed, macerated and lacks antennae. These two forms are here regarded as the major males of the species and *hystrix* represents the females. The males which Bagnall labelled

*hystrix* may be minor males of this species or they may represent a distinct species. The colour of the stem of antennal V varies from yellow to light brown, but the extreme apex of III and base of IV are black, contrasting with the surrounding yellow colour. The basal wing setae are light brown.

Holotype ♂. SEYCHELLES : Mahé [near Morne Blanc, x-xi.1908 (*H. Scott*)].

Holotype ♂ of *rex*. SEYCHELLES : Silhouette [Mare aux Cochons, 6.ix.1908 (*H. Scott*)].

Holotype ♀ of *hystrix*. SEYCHELLES : Silhouette [Mare aux Cochons, 6.ix.1908 (*H. Scott*)].

### ***Elaphrothrips malayensis* (Bagnall)**

*Dicaiothrips malayensis* Bagnall, 1909j : 525-526.

Three males remain in the Bagnall collection, and in one of these there is a well developed, fore femoral, sickle-shaped seta (cf. Priesner, 1934 : 195). From this specimen it appears that *bruneitarsis* Schmutz may well prove to be a synonym, particularly as Priesner (1935 : 64) has recorded that species from Indonesia. However *bruneitarsis* of Bagnall (1934c : 630) is not the same species.

Holotype ♂. INDONESIA : Isle of Nias (*Jordan*).

### ***Elaphrothrips nitidus* (Bagnall)**

*Dicaiothrips nitidus* Bagnall, 1910a : 372-373.

The posterior reticles of the pelta are smaller than the anterior reticles. Unlike *foveicollis* the postocular setae are well developed in this male specimen.

Holotype ♂. BRAZIL : Rio de Janeiro, near La Tijuca, 1901 (*E. R. Wagner*).

### ***Elaphrothrips priesneri* (Bagnall)**

*Dicaiothrips priesneri* Bagnall, 1926d : 554-555. Nomen novum for *D. breviceps* Priesner, 1921b nec Bagnall, 1921d.

This species was described by Priesner from Paraguay.

### ***Elaphrothrips procer* (Schmutz)**

(Text-figs. 37 & 38)

*Dicaiothrips procer* Schmutz, 1913 : 1063-1065.

*Dicaiothrips proximus* Bagnall, 1914c : 289. **Syn. n.**

*Elaphrothrips achaetus* Bagnall, 1934c : 633-634. **Syn. n.**

*Elaphrothrips approximatus* Bagnall, 1934c : 635-636. **Syn. n.**

*Elaphrothrips procer* (Schmutz) Priesner, 1935 : 60-61.

This synonymy is based on a comparison of Bagnall's type specimens with Priesner's redescription of *procer*. The fore tarsal tooth is quite distinctive in the

major males, although in the minor males (*approximatus*) the tooth is weaker and lacks the tubercle on the internal margin. As is not uncommon in females of *Elaphrothrips*, the type specimen of *achaetus* has no major outstanding setae on antennals III and IV.

Holotype ♂ of *proximus*. CEYLON : Peradeniya, *Crotalaria* pods, xi.1912 (*E. E. Green*).

Holotype ♀ of *achaetus*. CEYLON : Peradeniya, *Crotalaria* pods, xi.1912 (*E. E. Green*).

Holotype ♂ of *approximatus*. CEYLON : Peradeniya, *Hevea* dead leaves, 6.v.1914 (*A. Rutherford*).

### *Elaphrothrips propinquus* (Bagnall)

*Dicaiothrips propinquus* Bagnall, 1910a : 377-378.

The unique male on which Bagnall described this species is not in either the British Museum (Natural History) nor the University Museum, Copenhagen. The published data were ; VENEZUELA : Los Trincheras, II.xii.1891 (*Meinert*). This may represent the male of *brevicornis*.

### *Elaphrothrips seychellensis* (Bagnall)

*Dicaiothrips seychellensis* Bagnall, 1921b : 280-281.

*Elaphrothrips seychellensis* (Bagnall) Priesner, 1934 : 196.

Holotype ♀. SEYCHELLES : Mahé [above Port Glaud, 500-1,000 ft., 5.xi.1908 (*H. Scott*)].

### *Elaphrothrips spiniceps* Bagnall

*Elaphrothrips spiniceps* Bagnall, 1932e : 514-515.

In view of the absence of antennae from the unique holotype, this species cannot be placed in Priesner's key (1934).

Holotype ♂. INDIA : Sikkim, Gangtok (*Bailey*).

### *Elaphrothrips stenocephalus* (Bagnall)

*Dicaiothrips stenocephalus* Bagnall, 1914c : 288-289.

*Elaphrothrips nigrospinus* Bagnall, 1932e : 515-516. **Syn. n.**

*Elaphrothrips atrispinis* Bagnall, 1935a : 135-137. **Syn. n.**

*Elaphrothrips variispinis* Bagnall, 1935a : 137-138. **Syn. n.**

The stem of antennal segments IV and V varies in colour from yellow to light brown, although IV always has a conspicuous narrow dark brown ring at the extreme base. The major head, pronotal and femoral setae are dark, although the lateral abdominal setae and B<sub>1</sub> on tergite IX (not B<sub>2</sub> or B<sub>3</sub>) are hyaline. The first pair of cheek setae have pointed apices and the outer margins of the fore femora have

a series of stout thorn-like setae. The wings are narrow and pale although the cilia are dark. The basal wing setae are hyaline or weakly shaded (cf. *gabomiensis*).

Holotype ♂. [TANGANYIKA] : Moschi, 15.viii.1905 (*Katona*).

Holotype ♂ of *nigrospinosus*. TANGANYIKA : Morogoro, iii.1925 (*A. H. Ritchie*).

Holotype ♂ of *atrispinis*. EAST AFRICA : Nairobi, 1905 [this may be Engare Nairobi, between Moschi and Arusha in Tanganyika].

Holotype ♀ of *variispinis*. TANGANYIKA : Arusha, Rasha-rasha, on Onion, viii.1926 (*A. H. Ritchie*).

### *Euoplothrips buxtoni* Bagnall

*Euoplothrips buxtoni* Bagnall, 1928b : 68-71.

*Euoplothrips incognitus* Bagnall, 1928b : 71-72. **Syn. n.**

Bagnall described *buxtoni* from two females, and *incognitus* from a female and two males, but the differences between the two forms are here interpreted as being due to size variation. The specimens labelled *buxtoni* are much larger than those labelled *incognitus* but they were all collected together and they all have very similar post-ocular and basal wing setae. *E. buxtoni* may be separated from the related *uncinatus* as follows:

- |   |  |                         |
|---|--|-------------------------|
| 1 | Postocular setae acute, shorter than half of eye length ; basal wing setae slightly expanded, the second seta about 1.5 times as long as the distance between the second and third seta . . . . .        | <b><i>uncinatus</i></b> |
| - | Postocular setae blunt, about as long as eye ; basal wing setae softly rounded, the second seta about 2.5 (2.7 in ♀, 2.3 in ♂) times as long as the distance between the second and third seta . . . . . | <b><i>buxtoni</i></b>   |

LECTOTYPE ♀. TONGA : Nukualop, leaves of *Ficus*, 20.ii.1925 (*Buxton & Hopkins*).

LECTOTYPE ♀ of *incognitus*. TONGA : Nukualop, leaves of *Ficus*, 20.ii.1925 (*Buxton & Hopkins*).

### *Euoplothrips uncinatus* Bagnall

*Euoplothrips uncinatus* Bagnall, 1928b : 73-74.

This species was described from one male and one female and characters for separating these from *buxtoni* are given above.

LECTOTYPE ♀. SAMOA : Upolu Is., Apia, leaves of *Ficus*, 25.v.1925 (*Buxton & Hopkins*).

### *EUPATHITHRIPS* Bagnall

*Eupathithrips* Bagnall, 1908c : 203. Type-species *E. dentipes*, by monotypy.

*Eupathithrips* Bagnall ; Stannard, 1957 : 43-44.

This genus is similar to *Acanthothrips* as pointed out by Stannard. The praepectus is absent, there are three subapical sense cones on antennal III and the abdominal tergites bear more than two pairs of wing retaining setae.

***Eupathithrips affinis* Bagnall**

*Eupathithrips affinis* Bagnall, 1915d : 501.

The unique holotype is not available for study as the mountant has turned black.

Holotype ♂. TRINIDAD : Tucuche, on epiphytic Bromeliad, 20.iii.1912 (*H. Scott*).

***Eupathithrips dentipes* Bagnall**

*Eupathithrips dentipes* Bagnall, 1908c : 204-205.

Holotype ♀. GUATEMALA : Salle Coll., without further data.

**EURHYNCHOTHRIPS Bagnall**

*Eurhynchothrips* Bagnall, 1918a : 213-214. Type-species *E. convergens*, by monotypy.

Head broad ; antennae eight-segmented, one sense cone on III and three on IV ; maxillary stylets slender, close together in middle of head with stout maxillary bridge ; mouth cone long and pointed. Praepectus absent, mesopraesternum often degenerate. Fore tarsus unarmed ; fore wings with accessory cilia. Pelta broadly triangular ; tube not long ; major setae expanded at apices.

*Mimothrips* Priesner, proposed as a subgenus of *Eurhynchothrips*, is here regarded as a full genus (q.v.).

***Eurhynchothrips convergens* Bagnall**

(Text-figs. 29 & 70)

*Eurhynchothrips convergens* Bagnall, 1918a : 214-215.

The original description states that this species was based on males, but the holotype and six paratypes in the British Museum are all females. Both *convergens* and *flavicornis* have two pairs of epimeral setae, but in *convergens* the median part of the metanotum is without sculpture and the median setae are broadly expanded, whereas in *flavicornis* the metanotum is striate and the median setae are acute apically.

Holotype ♀. GHANA : Aburi, Cola shoots and buds, 5.xi.1915 (*W. H. Patterson*).

***Eurhynchothrips flavicornis* Bagnall**

*Eurhynchothrips flavicornis* Bagnall, 1926d : 550-551.

The structure of the metanotum and its setae are referred to under *convergens*. In *flavicornis* the antennal sensoria are short and fine, whereas in *convergens* they are very broad and almost half the length of the segments on antennals III and IV. Seta B<sub>2</sub> on the ninth abdominal segment of the male is about half as long as B<sub>1</sub>.

Holotype ♂. SIERRA LEONE : Falaba, in stem gall of *Micragyne macrophylla*, 6.ii.1925 (*E. Hargreaves*).

***Eurhynchothrips messuicola* (Bagnall) comb. n.**

*Gynaikothrips messuicola* Bagnall, 1929e : 602-603.

*Gynaikothrips sodalis* Bagnall, 1929e : 603-604. **Syn. n.**

The tube varies in length in the three available males of *messuicola* from 134 $\mu$  to 166 $\mu$ . The tube of the *sodalis* holotype is 129 $\mu$ . Contrary to the description, antennal V is brown in the distal third and IV is shaded distally to a variable extent (never 'clear yellow'). The type of *sodalis* is therefore regarded as a small form of *messuicola*. This species is similar to *Eurhynchothrips ordinarius* Hood (cf. Ananthakrishnan, 1964 : 44). The maxillary stylets are close together in the middle of the head and there is a stout and short maxillary bridge, however the mouth cone of *messuicola* is short. These two species differ from the African species referred to above in having only one pair of major epimeral setae.

LECTOTYPE ♂. MALAYA : *Messua ferrea* (J. Brander).

Holotype ♂ of *sodalis*. MALAYA : *Messua ferrea* (J. Brander).

***EURYNOTHRIPS* Bagnall**

*Eurynothrips* Bagnall, 1908c : 199. Type-species *E. magnicollis*, by original designation.

Head parallel-sided, constricted medially in large specimens, vertex reticulate basally. Antennae eight-segmented, VIII constricted basally, pore of II in median part of segment. Maxillary stylets slender, wide apart low in head. Praepectus present, mesopraesternum degenerate. Pronotum very large, anterior setae about one third as long as the epimerals and postero-angulars. Mesonotum reticulate, median setae small. Pelta triangular; male abdomen apparently without glandular areas or short B<sub>2</sub> setae on segment IX. Fore tarsus with a large tooth, fore tibia produced at apex. Fore wings with numerous accessory cilia. Setae on tergite IX acute, remaining major setae with expanded rounded apices.

***Eurynothrips magnicollis* Bagnall**

*Eurynothrips magnicollis* Bagnall, 1908c : 199-201.

*Eurynothrips denticollis* Bagnall, 1908c : 201. **Syn. n.**

*Eurynothrips denticollis* Bagnall ; Bagnall, 1932e : 509-510.

Bagnall described these forms from pinned specimens and these have now been mounted on slides. The two syntypes of *denticollis* include a male and a female, and of the three remaining syntypes of *magnicollis* two are females and one male. The cheek pouches, the ventral spine-like projection of the frons, and the lateral tooth on the pronotum which were used to distinguish the two forms are here interpreted as being due to overall size differences. Bagnall's record of this species from the Seychelles (1921b : 277) needs further substantiation as it could have arisen through an error in labelling.

LECTOTYPE ♀. AUSTRALIA : Queensland, Townsville, 16.vii.1902 (F. P. Dodd).

LECTOTYPE ♀ of *denticollis*. AUSTRALIA : Queensland, Townsville, 14.vii.1902 (F. P. Dodd).

***Eurythrips modestus* (Bagnall) comb. n.**

*Malacothrips modestus* Bagnall, 1917 : 24-26.

This is a typical member of the genus *Eurythrips* as defined by Stannard (1957). The praepectus is well developed and the pelta is broadly semicircular. The lateral abdominal setae of segments II to VI and VIII have expanded apices, but the extreme lateral pair on VII are finely acute and the median lateral pair are slightly flattened.

Holotype ♀. ST. VINCENT : (*H. H. Smith*).

***Fulgorothesis breviceps* (Bagnall)**

*Phoxothrips breviceps* Bagnall, 1914f : 380-381.

*Fulgorothesis breviceps* (Bagnall) Ananthakrishnan, 1964 : 96.

The unique holotype has a well developed praepectus, broad pelta, and two pairs of wing retaining setae on each tergite.

Holotype ♂. INDIA : Simla, 7,000 ft., 7.v.1910 (*Annandale*).

**GIGANTOTHRIPS Zimmermann**

*Gigantothrips* Zimmermann, 1900 : 18. Type-species *G. elegans* Zimm., by monotypy.

*Cercothrips* Hood, 1919a : 73-74. Type-species *Acanthinothrips nigrodentatus* Karny, by monotypy. **Syn. n.**

*Panurothrips* Bagnall, 1908c : 208. Type-species *P. gracilis* (= *elegans*), by monotypy.

*Cercothrips* Hood ; Priesner, 1937a : 134.

The above synonymy is based on a comparison of type material of the species concerned with several other members of the genus. The chaetotaxy of the anterior margin of the pronotum is very different in *elegans* and *nigrodentatus*, but in *marshalli* Pr. for example the antero-angular setae are reduced and there is more than one seta along the anterior margin of the pronotum. The ocellar cone and lateral abdominal setae are similarly variable. The major setae on tergite IX are acute in *elegans* and *caudatus*, but the latter species is related to the other African species treated below. The genus may be defined as follows:

Head long, 1.5 times as long as wide or longer, weakly projecting in front of eyes ; ocelli sometimes raised on a cone-shaped projection ; no elongate postocular setae, one or two pairs of short stout setae on vertex ; cheeks with several pairs of setae, these frequently stout ; eyes large, mouth cone broadly rounded, maxillary stylets slender, close together, low in head. Antennae eight-segmented, VII and VIII broadly jointed ; one sense cone on III, four on IV although the dorsal one is barely one third as long as the other three sense cones. Pronotal major setae when present short and stout, midlaterals distant from epimeral sutures ; epimeral sutures complete ; praepectus absent, mesopraesternum very well developed. Metanotum reticulate, longitudinally in anterior half. Fore tarsus with a tooth in both sexes ; fore wing broad with numerous accessory cilia, basal setae never elongate. Pelta small, triangular, reticulate ; tergites with eight or more pairs of accessory wing retaining setae in addition to at least two pairs of sigmoid setae ; posterolateral tergal setae short and stout ; tube long, reticulate with weak decumbent hairs. Ten nominal species placed in this genus have not been

examined by the present author, the following key being based on material in the British Museum (Natural History) ;

- |   |   |                      |
|---|---|----------------------|
| 1 | Pronotum with no enlarged major setae developed . . . . .   | <b>caudatus</b>      |
| – | At least epimeral setae well developed . . . . .  | 2                    |
| 2 | Postero-angular pronotal setae stout, at least half as long as epimerals . . . . .  | 3                    |
| – | Postero-angular pronotal setae small, much smaller than epimerals . . . . .   | 5                    |
| 3 | Tube more than 1.5 times as long as head, usually between 1.6 and 2.0 ; B <sub>1</sub> setae on tergite IX short, about 0.1 times as long as tube . . . . .   | <b>marshalli</b>     |
| – | Tube shorter, about 1.2 to 1.4 times as long as the head . . . . .  | 4                    |
| 4 | B <sub>1</sub> setae on tergites IX 0.25 to 0.35 as long as tube . . . . .  | <b>vuilleti</b>      |
| – | B <sub>1</sub> setae on tergite IX 0.15 to 0.20 as long as tube . . . . .   | <b>micrurus</b>      |
| 5 | Major pronotal setae very dark ; African species . . . . .  | 6                    |
| – | Major pronotal setae pale, hyaline ; Oriental species . . . . .   | 7                    |
| 6 | Reticles of metanotal sculpture between the median setae narrow, much narrower than posterior metanotal reticulations (Text-fig. 67) ; B <sub>1</sub> setae on tergite IX about 0.1 times as long as tube . . . . . | <b>turneri</b>       |
| – | Anterior reticles of metanotum linear but almost as broad as posterior reticles (Text-fig. 66) ; B <sub>1</sub> setae on tergite IX about 0.2 times as long as tube . . . . .                                       | <b>modestus</b>      |
| 7 | Anterior margin of pronotum with about eight pairs of short setae, antero-angulars not enlarged . . . . .   | <b>elegans</b>       |
| – | Antero-angular pronotal setae almost as stout as epimerals, anterior margin with only four pairs of setae . . . . .   | 8                    |
| 8 | Anterior part of mesonotum reticulate or with broadly spaced striations ; antero-angular and midlateral setae closer together than their length . . . . .   | <b>tibialis</b>      |
| – | Anterior part of mesonotum more closely striate (Text-fig. 65) ; antero-angular and midlateral pronotal setae further apart than their length . . . . .   | <b>nigrodentatus</b> |

### *Gigantothrips caudatus* (Bagnall)

*Panurothrips caudatus* Bagnall, 1910b : 427-428.

*Gigantothrips caudatus* (Bagnall) ; Faure, 1953 : 212-216.

Contrary to many species in this genus the tube setae of *caudatus* are not decumbent but stand out at an angle of about forty five degrees. Moulton's record of *caudatus* from Pondoland (1930b : 416) is a mis-identification of *turneri*.

Holotype ♀. SOUTH AFRICA : Cape Province, Knysna, on *Curtisia fraginea* (E. J. O'Connor).

### *Gigantothrips elegans* (Zimmermann)

*Gigantothrips elegans* Zimmermann, 1900 : 18-19.

*Panurothrips gracilis* Bagnall, 1908c : 208-210.

*Gigantothrips crawfordi* Hood, 1919a : 71-73. **Syn. n.**

A paratype of *crawfordi* from the Philippines has been compared with the type specimens of *gracilis* and material of *elegans* from Java and India.

Holotype ♀ of *gracilis*. THAILAND : Bangkok (H. Hillman). BM 1899-20.



***Gigantothrips marshalli* Bagnall**

*Gigantothrips marshalli* Bagnall, 1926d : 560.

*Idolothrips niger* Moulton, 1928a : 247-248. **Syn. n.**

*Gigantothrips fumipennis* Bagnall, 1934b : 493-494. **Syn. n.**

Type material of *afer* Priesner from Sudan has not been studied, but specimens bearing this name from Uganda and Sierra Leone are apparently identical with *marshalli*. Moulton described *niger* from a unique specimen, probably a female, which is too opaque to study in detail. *G. fumipennis* was distinguished from *turneri* on account of the shaded wings, but specimens of *marshalli* from Akure, Nigeria on *Ficus elastica* have shaded fore wings, although this is not apparent in the type specimens, which have been macerated in caustic alkali.

Holotype ♀. NIGERIA : Ibadan, 1926 (*O. B. Lean*).

Holotype ?♀ of *niger*. ETHIOPIA : Djem-Djem Forest, 21.ix.1926 (*H. Scott*).

Holotype ♀ of *fumipennis*. TANGANYIKA : without data (*W. A. Lambourn*).

***Gigantothrips micrurus* Bagnall**

*Gigantothrips micrurus* Bagnall, 1936 : 223-224.

Only two specimens of this species have been studied and these could be interpreted as a variety of *marshalli* with a short tube. The setae on tergite IX are stout as in *marshalli* not slender as *vuilleti*.

Holotype ♂. DAHOMEY : Kotonou, 4.xi.1908 (*R. Blanchard*). Paris Museum. The allotype female is in the British Museum (Natural History).

***Gigantothrips tibialis* Bagnall**

(Text-fig. 64)

*Gigantothrips tibialis* Bagnall, 1921c : 364-365.

This species is very close to *nigrodentatus* Karny from Java. According to Ananthakrishnan (1964 : 36) it is very common in India.

LECTOTYPE ♀. CEYLON (*E. E. Green* 82).

***Gigantothrips turneri* Bagnall**

(Text-fig. 67)

*Gigantothrips turneri* Bagnall, 1926d : 559-560.

Although placed near the Uganda species *modestus* Priesner in the above key, *turneri* is closely related to *marshalli* in the metanotal sculpture and stout short setae on tergite IX.

Holotype ♀. SOUTH AFRICA : Pondoland, Port St. John, 1-14.v.1923 (*R. E. Turner*).

***Gigantothrips vuilleti* Bagnall**

*Gigantothrips vuilleti* Bagnall, 1934b : 492-493.

Although similar to *marshalli* in its sculpture, *vuilleti* is quite distinctive in having long, slender, rather pale setae on tergite IX. The species is not in the Paris Museum collection but there are three females and three males labelled as paratypes in the British Museum.

Paratypes ♂♂ and ♀♀. MALI REPUBLIC : Koulikoro, on *Ficus gnaphalocarpa*, iii.1913 (*J. Vuillet*).

***Gynaikothrips australis* Bagnall**

*Gynaikothrips australis* Bagnall, 1929h : 187-188.

There are two pairs of postocular setae in this species, stout and dark with flattened apices. The epimeral and postero-angular pronotal setae are hyaline and almost as long as the pronotum.

Syntypes ♂ & ♀. AUSTRALIA : New South Wales, Gosford, curling leaves of *Ficus macrophylla*, 13.vi.1902 (*W. W. Froggatt*).

***Gynaikothrips hopkinsi* Bagnall**

*Gynaikothrips hopkinsi* Bagnall, 1928b : 66-67.

LECTOTYPE ♂. SAMOA : Upolu Is., Apia, on *Ficus* leaves, 25.v.1925 (*Buxton & Hopkins*).

***Gynaikothrips hystrix* Bagnall**

*Gynaikothrips hystrix* Bagnall, 1928b : 64-66.

This species is very close to *hopkinsi*. They both have two pairs of very long acute postocular setae, but *hystrix* is distinguished by the presence of two pairs of subequal epimeral setae and the long postocellars which reach to antennal II.

LECTOTYPE ♂. TONGA : Nukualop, on *Ficus* leaves, 20.ii.1925 (*Buxton & Hopkins*).

***Gynaikothrips karnyi* Bagnall**

*Gynaikothrips karnyi* Bagnall, 1914b : 28-29.

*Gynaikothrips karnyi* Bagnall ; Ananthakrishnan, 1964 : 46.

Holotype ♀. CEYLON : Peradeniya, marginal leaf galls of *Piper nigrum*, 21.vii.1913 (*A. Rutherford*).

***Gynaikothrips ficorum*** (Marchal)

*Phloeothrips ficorum* Marchal, 1908 : 252.

*Leptothrips flavicornis* Bagnall, 1909j : 528-529. **Syn. n.**

*Gynaikothrips ficorum* (Marchal) ; Canizo, 1945 : 123-156.

Contrary to Bagnall's statement (1916b : 409) *flavicornis* is not a synonym of *uzeli* Zimmermann, a species found only in the Far East.

Syntypes ♂ & ♀ of *flavicornis*. MADEIRA (*Meinert*).

***Gynaikothrips scotti*** Bagnall

*Gynaikothrips scotti* Bagnall, 1921b : 273-274.

Holotype ♀. SEYCHELLES : Silhouette, ix.1908 (*H. Scott*).

***Gynaikothrips uzeli*** (Zimmermann)

*Mesothrips uzeli* Zimmermann, 1900 : 12-14.

*Phloeothrips longitubus* Bagnall, 1909j : 534-535.

*Gynaikothrips uzeli* (Zimmermann) ; Canizo, 1945 : 123-156.

This can be distinguished from the widespread *ficorum* by the elongate postero-angular pronotal setae.

Syntypes ♂ & ♀♀ of *longitubus*. JAVA : Semarang, young top leaves of Waringin [*Ficus benjamina*] (*E. Jacobson*).

**HAPLOTHRIPS** Amyot & Serville

*Haplothrips* Amyot & Serville, 1843 : 640. Type-species, by monotypy, *Phloeothrips albipectus* Burmeister, 1839, a synonym of *Thrips aculeatus* Fabricius, 1803, in Priesner, 1928.

*Haplothrips* (*Trybomiella*) Bagnall, 1926d : 548. Type-species of subgenus *Anthothrips bagnalli* Trybom, 1910, by original designation.

*Haplothrips* Bagnall, 1934e : 495-496. Type-species *H. globiceps*, by monotypy.

*Haplothrips* Amyot & Serville ; Priesner, 1950 & 1964.

*Karyothrips* is treated here as a distinct genus, but *Xylaplothrips* is regarded as a synonym of *Haplothrips*. *Trybomiella* is not accepted in view of the demonstration that in *cottei* Vuillet the fore wing accessory cilia may be present or absent (O'Neill, 1960). The species of *Haplothrips* described by Bagnall and accepted as valid are here listed in Table II under four sections according to a classification proposed by Miss O'Neill (in litt. 1964). Section I includes Holarctic species, II includes many European species as well as the Indian *tenuipennis* and the (presumably) African *gowdeyi*, III includes African and Australian species, and IV includes species from Europe, Africa, Asia and Australia.

TABLE II  
 Bagnall's species of the genus *Haplithrips* or their senior synonyms (*silhouettensis* is not recognizable)

Section I			
Antennal III with 1 sense cone Postocular setae acute	Antennal III with 2 sense cones Fore wing with accessory cilia	Antennal III with 2 sense cones Fore wing without accessory cilia	Antennal III with 1 sense cone Postocular setae not acute
<i>aculeatus</i> Fabricius	<i>eryngii</i>	<i>articulosus</i>	<i>apicalis</i>
<i>pineticola</i>	<i>fuliginosus</i> Schille	<i>dotichothripoides</i>	<i>globiceps</i>
	<i>gowdeyi</i> Franklin	<i>nigricornis</i>	<i>jordani</i>
	<i>juncorum</i>	<i>robustus</i>	<i>longipes</i>
	<i>malbaeki</i>	<i>tertius</i>	<i>phyllireae</i>
	<i>marrubicola</i>		<i>priesnerianus</i>
	<i>microsetosus</i>		<i>sorghii</i>
	<i>propinquus</i>		<i>sorghicola</i>
	<i>quadratriceps</i>		<i>victoriensis</i>
	<i>reuteri</i> Karny		
	<i>senecionis</i>		
	<i>setiger</i> Priesner		
	<i>tenuipennis</i>		

***Haplothrips aculeatus* (Fabricius)**

*Thrips aculeatus* Fabricius, 1803 : 312.

*Haplothrips cephalotes* Bagnall, 1913j : 265-266.

Syntypes ♂♂ and ♀♀ of *cephalotes*. ENGLAND : Weston-on-the-Green, in sedge stacks, viii.1913 (R.S.B.).

***Haplothrips apicalis* (Bagnall)**

*Hindsiana apicalis* Bagnall, 1915a : 323.

Pelikan (1963) in describing a new species *cingulatus*, referred *apicalis* to the subgenus *Trybomiella*. Both of these species have a single sense cone on antennal III however and are not closely related to *bagnalli* Trybom. The present author has not examined macropterous specimens of *apicalis*, but the three basal wing setae on the micropterous forms available all have expanded apices. The maxillary bridge is long and slender and all the prothoracic major setae are developed.

LECTOTYPE ♀. [INDIA : Almora, Kumaon, 5,500 ft., jungle plant, 4.vii.1911 (O. Paiva)].

***Haplothrips articulatus* Bagnall**

(Text-fig. 42)

*Haplothrips articulatus* Bagnall, 1926d : 548-549.

*Haplothrips trybomianus* Priesner, 1927b : 70. **Syn. n.**

*Haplothrips* (*Trybomiella*) *derisor* Priesner, 1935b : 324. **Syn. n.**

The male and female syntypes of *trybomianus* (= *bagnalli* var. *pallicornis* Trybom, 1911) from Mombasa, Kenya have been compared with the type series of *derisor* from Sierra Leone and numerous specimens from Nigeria, Ghana, Tanganyika, Malawi and the Congo. Midlateral prothoracic setae are present as in *tertius* and these two species are very closely related. In *articulatus* the aedeagus tip is pincers-shaped whereas in *tertius* it is spoon-shaped. Both species are commonly found in flowers of Compositae.

Holotype ♀. TANGANYIKA : Morogoro, Sunflower blossom, 9.i.1925 (A. H. Ritchie).

Syntypes ♂ & ♀ of *trybomianus*. KENYA : Mombasa, scarlet *Acacia* flowers, 21.xii.1910 (Lönnberg). Riksmuseum, Stockholm.

Holotype ♀ of *derisor*. SIERRA LEONE : *Erigeron sumatrensis* leaves (E. Hargreaves).

***Haplothrips dolichothripoides* Bagnall**

*Haplothrips* (*Trybomiella*) *dolichothripoides* Bagnall, 1933a : 315-317.

Priesner (1950 : 93) indicated that this species might be a synonym of *clarisetis* Priesner. However the unique male and female both have softly pointed postocular

and third subbasal wing setae, whereas these setae have distinctly expanded apices in *clarisetis* females at least. The tip of the aedeagus is similar to that of *clarisetis* but much more strongly constricted subapically.

Holotype ♀. SUDAN : Wad Medani, on cotton seedlings, 17.ii.1932 (*W. P. L. Cameron*).

### *Haplothrips eryngii* Bagnall

*Haplothrips eryngii* Bagnall, 1934e : 497-499.

Unfortunately this species is known only from females, and these probably represent either *leucanthemi* Schrank or *angusticornis* Priesner. The fore wings are pale and the colour of antennals IV and V varies from entirely brown to yellow basally. The type specimen is not in the Paris Museum or the British Museum (Natural History).

Paratypes ♀. FRANCE : Gers, Ornezan, *Eryngium campestre*, 17.viii.1913 (*Vuillet*).

### *Haplothrips fuliginosus* (Schille)

*Cryptothrips fuliginosa* Schille, 1911 : 7-8.

*Haplothrips (Xylaplothrips) fuliginosus* (Schille) Priesner, 1928 : 572.

*Haplothrips obscuripennis* Bagnall, 1913j : 264-265.

The subgenus *Xylaplothrips* is distinguished by the presence of only two sense cones on antennal IV. In view of the comments by Faure (1956b : 336), when describing the South African species *callani*, it seems likely that the present subgenera of *Haplothrips* have little significance.

LECTOTYPE ♂ of *obscuripennis*. ENGLAND : Oxford, Hogley Bog, old bean sticks, ix.1913 (*R.S.B.*).

### *Haplothrips globiceps* (Bagnall)

*Haplothrips globiceps* Bagnall, 1934e : 496-497.

The unique female upon which this species is based belongs in the *minutus* group but differs from the holotype of *flavitibia* Williams in having the apices of the major setae hyaline but not clearly expanded. The maxillary bridge is wide and the pronotal anterior marginal setae reduced.

Holotype ♀. TURKEY : Smyrna, *Vitis vinifera*, 25.vi.1913 (*M. Sureya*).

### *Haplothrips gowdeyi* (Franklin)

*Anothrips gowdeyi* Franklin, 1908 : 724.

*Anothrips usitatus* Bagnall, 1910d : 695-696.

*Haplothrips brevicollis* Bagnall, 1913f : 297. **Syn. n.**

*Haplothrips karnyi* Bagnall, 1913f : 296-297. **Syn. n.**

*Haplothrips mahensis* Bagnall, 1921b : 267-268.

The specimens labelled as males in the original series of *usitatus* are actually females, and Bagnall's statement in describing *karnyi* that the setae on tergite IX are longer than in *usitatus* is not correct. The unique holotype of *karnyi* and the two syntypes of *brevicollis* differ from typical *gowdeyi* in having antennal VI yellow, but they resemble the common species in other respects, particularly in having the third subbasal wing setae expanded apically and about equal in length to the epimerals. In a recent collection of this species from Kenya the length of the third subbasal wing seta is variable, and the weak apical expansion of this seta has collapsed, in most cases with the result that these setae appear to be acute. This is an artefact caused by the Berlese Mountant but the other major setae were not affected.

Syntypes ♀ of *usitatus*. HAWAII : Kona, 2,000 ft., on Hilo grass, ix.1892 (*Perkins*).

Syntypes ♀ of *brevicollis*. [? KENYA : Kibos] Africa Orientale, Kibosho, 1903 (*Kittenberger*).

Holotype ♀ of *karnyi*. TANGANYIKA : Arusha, x-xi.1905.

Holotype ♀ of *mahensis*. SEYCHELLES : Mahé, 1908-09 (*H. Scott*).

### *Haplothrips jordani* (Bagnall)

*Zygothrips jordani* Bagnall, 1909j : 530-531.

*Haplothrips vernoniae* var. *grandior* Priesner, 1933 : 361. **Syn. n.**

Although the original description refers to numerous specimens only a single male remains in the Bagnall collection. The above synonymy is based on a comparison of this male with a female syntype of *grandior*. The tip of the aedeagus in *vernoniae* is very similar to *jordani* but in the latter species antennal III is twice as long as wide and has several ring-like constrictions in the basal third. The epimeral setae are dark, and the third subbasal wing seta is softly pointed.

Holotype ♂. JAVA : Isle of Nias (*K. Jordan*).

Syntype ♀ of *grandior*. TAIWAN : Taihoku, *Cirsium japonicum*, II.X.1921 (*Okuni*).

### *Haplothrips juncorum* Bagnall

*Haplothrips juncorum* Bagnall, 1913g : 227-228.

*Haplothrips junicola* Bagnall, 1932a : 165. **Syn. n.**

This common European species is distinguished by the maxillary stylets, which almost meet in the middle of the head a little posterior to the narrow maxillary bridge. *H. quadraticeps* and *H. kilimandjarica* are rather similar in this character. *H. junicola* was based on a single gynaecoid male with unusually dark antennae.

Syntypes ♀. ENGLAND : Yarnton, *Juncus*, vi.1913 (*R.S.B.*).

Holotype ♂ of *junicola*. ENGLAND : Surrey, Oxshott, *Juncus*, 28.ix.1927 (*G. D. Morison*).

***Haplothrips longipes*** Bagnall

(Text-fig. 44)

*Haplothrips longipes* Bagnall, 1926e : 654-656.

Only two specimens, a male and a female, are available of this species. It belongs near *minutus* Uzel along with *phyllireae*, *flavitibia* Williams and *corticinus* Priesner. The tip of the aedeagus is more widely expanded than in *phyllireae*.

LECTOTYPE ♂. SPAIN : St. Esteban, 23.vi.1912 (*Navás*).***Haplothrips maltbaeki*** Bagnall

(Text-fig. 47)

*Haplothrips maltbaeki* Bagnall, 1933a : 324-325.

This species is related to *leucanthemi* and *setiger*. The terminal wing cilia are weakly plumose as in *leucanthemi*, the anterior marginal and midlateral pronotal setae are no larger than the discal setae but the epimerals are about 60 to 80 $\mu$ , the postero-angulars 50 to 60 $\mu$  and the antero-angulars 30 to 40 $\mu$ . The tip of the aedeagus is parallel-sided and no wider than the shaft.

LECTOTYPE ♂. FRANCE : Montlouis, 5,000 ft., *Cistus* sp., viii.1926 (*R.S.B.*).***Haplothrips marrubiicola*** Bagnall*Haplothrips marrubiicola* Bagnall, 1932a : 163-164.

This species is known only from the original series. Bagnall's measurements of the female are overestimated, thus the postoculars are 80 $\mu$ , postero-angulars 100 $\mu$ , median setae on tergite IX 110 $\mu$  and the tube 150 $\mu$ . *H. graecus*, to which this species was compared, has no major setae on the anterior margin of the pronotum and has much shorter setae on tergite IX relative to the tube. With the exception of the postoculars the major setae are not truly acute, their apices being softly rounded. The most closely related species is apparently *verbasci* Osborn.

LECTOTYPE ♂. ENGLAND : Rye, *Marrubium vulgare*, 29.vi.1930 (*G. D. Morison*).***Haplothrips microsetosus*** Bagnall*Haplothrips microsetosus* Bagnall, 1933a : 319.

The unique holotype of this species belongs in the *leucanthemi* group and probably represents *angusticornis* Priesner. The wings are paler than typical *leucanthemi* but the tube is 2.9 times as long as its maximum breadth and the terminal wing cilia are weakly plumose.

Holotype ♀. CZECHOSLOVAKIA : Vsetin, ix.1929 (*R.S.B.*).



***Haplothrips nigricans* Bagnall**

*Haplothrips nigricans* Bagnall, 1934e : 499-500.

*Haplothrips nigricans* Bagnall ; Priesner, 1964 : 157.

The unique holotype female is not in either the Paris Museum or the British Museum (Natural History). The original collection data were ; FRANCE : Beaune, *Sambucus ebulus*, I.vii.1913 (A. Paillet).

***Haplothrips nigricornis* (Bagnall)**

*Androthrips nigricornis* Bagnall, 1910b : 425-426.

*Haplothrips unicolor* Bagnall, 1919 : 274-275.

*Haplothrips nigricornis* (Bagnall) ; Faure, 1955 : 208-218.

According to Faure this species differs from *bagnalli* in lacking major anteromarginal and posteromarginal pronotal setae. This group needs further study in South Africa as the present author has examined a number of males with very similar chaetotaxy but in which the aedeagus is different from either *bagnalli* or *nigricornis*. These species are related to *clarisetis*, *dolichothripoides* and *robustus* in that they lack pronotal midlateral setae. The epimeral setae have expanded apices in the females but softly pointed apices in the males.

Syntypes ♂ & ♀♀. [SOUTH AFRICA : Cape Town, flowers of *Diplopappus*, *Europs*, *Olipterus* and *Sebaea*].

Syntypes ♂ and ♀ of *unicolor*. SOUTH AFRICA : Pirie, no other data.

***Haplothrips phyllireae* Bagnall**

*Haplothrips phyllireae* Bagnall, 1933a : 329-330.

The anteromarginal pronotal setae vary from quite small to as long as the anteromarginals. The aedeagus is very similar to *minutus* as figured by Fabian (1938). The postocular seta is very weakly expanded apically, and the maxillary bridge is wide as in *longipes* and *globiceps*.

LECTOTYPE ♂. FRANCE : Hyères Plage, *Phyllirea*, ix.1927 (R.S.B.).

***Haplothrips pineticola* Bagnall**

*Haplothrips pineticola* Bagnall, 1926e : 656.

This species is probably a synonym of *phyllophilus* Priesner, 1914. It can be distinguished from *aculeatus* by the absence of a fore tarsal tooth, and the presence of well developed pronotal anteromarginal setae.

LECTOTYPE ♀. FRANCE : Font Romeu, 5,500 ft., *Pinus*, viii.1926 (R.S.B.).

***Haplothrips priesnerianus* Bagnall**

(Text-fig. 45)

*Haplothrips priesnerianus* Bagnall, 1933a : 327-328.*Haplothrips tolerabilis* Priesner, 1936 : 96-97. **Syn. n.***Haplothrips tolerabilis* Priesner ; Faure, 1956a : 115-117.

The aedeagus and chaetotaxy of specimens determined as *tolerabilis* by J. C. Faure have been compared with the type specimens of *priesnerianus*. Some specimens in the British Museum (Natural History) collection determined by various authors as *ganglbaueri* Schmutz are also conspecific with *priesnerianus*, but the type specimens of Schmutz's species have not been seen by the present author. *H. tolerabilis* was described from Sudan and later recorded from Libya and Southern Sudan. The present author has examined specimens from rice and other Gramineae from the Solomon Islands, and also specimens from Gramineae and some dicotyledons in West Pakistan.

LECTOTYPE ♂. [INDIA : Allahabad, flowers of *Lantana* in jungle, 26.iii.1910 (A. D. Imms)], Reg. 209.

***Haplothrips propinquus* Bagnall**

(Text-fig. 43)

*Haplothrips propinquus* Bagnall, 1933a : 325-326.

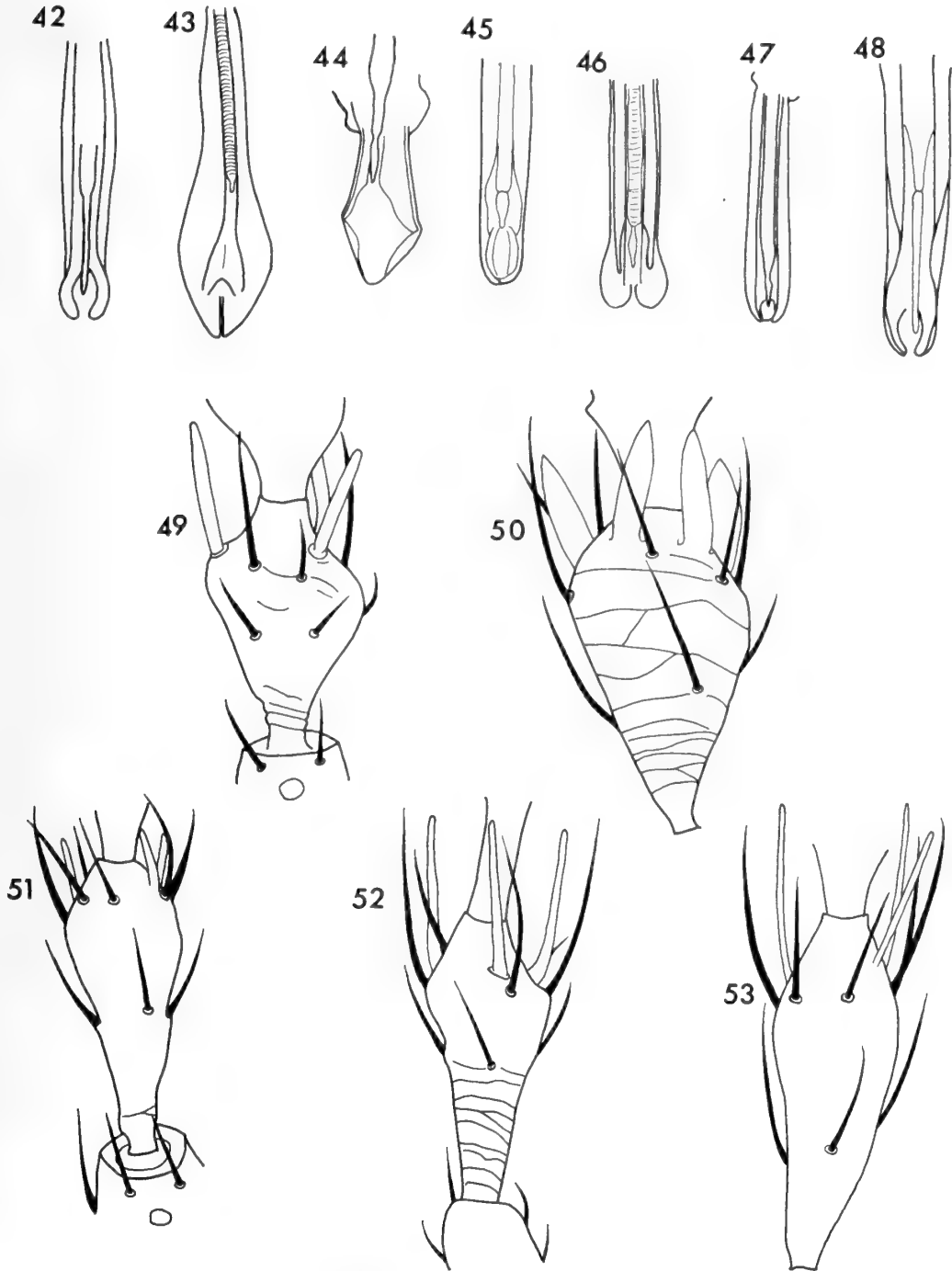
The unique male holotype of this species is mounted with the aedeagus well displayed. The expanded spoon-shaped tip of this structure is 20 $\mu$  broad and about 40 $\mu$  long, and the shaft is about 30 $\mu$  by 10 $\mu$ . The same species is present in the Bagnall collection from the Eastern Pyrenees labelled '*angusticornis* Priesner'. The present author has not examined type specimens of *angusticornis* but Fabian (1938) illustrates the aedeagus of that species as barely wider than the shaft. *H. angusticornis* of Morison (1949 : 99) is actually *propinquus*, and the true host plant is *Achillea millefolium*.

Holotype ♂. FRANCE : l'Hospitalet, 6,000 ft., *Dianthus fimbriatus*, viii.1926 (R.S.B.).

***Haplothrips quadraticeps* Bagnall***Haplothrips quadraticeps* Bagnall, 1933a : 333-334.

This species resembles *juncorum* in the shape of the head and eyes, and the elongate maxillary stylets which are close together in the middle of the head. The terminal wing cilia are weakly plumose and the pronotal anteromarginal setae are no longer than the discal setae.

Holotype ♀. FRANCE : L. Bouillouse, nr. Montlouis, *Sempervivum*, viii.1926 (R.S.B.).



FIGS. 42-53. Figs. 42-48. Aedeagus of *Haplothrips* species males: 42, *articulosus*. 43, *propinquus*, holotype. 44, *longipes*, lectotype. 45, *priesnerianus*. 46, *tenuipennis*, 47, *malibaeki*, paratype. 48, *tertius*, paratype. Figs. 49-53. Antennal III of *Hoplandrothrips* species: 49, *coffea*. 50, *flavipes*. 51, *hoodi*. 52, *hystrix*. 53, *trybomi*.

***Haplothrips reuteri* (Karny)**

- Anthemothrips reuteri* Karny, 1907 : 51.  
*Haplothrips satanus* Bagnall, 1933a : 321-323.  
*Haplothrips tenuisetosus* Bagnall, 1933a : 320-321.  
*Haplothrips reuteri* (Karny) ; Priesner, 1964 : 151.

According to Priesner this species is widespread in the Mediterranean region. The median dorsal setae on abdominal segment IX are almost as long as the tube, and the three subbasal wing setae arise close together with their bases forming a triangle.

Holotype ♀ of *satanus*. FRANCE : Perpignan, *Centaurea solstitialis*, viii.1926 (R.S.B.).

Holotype ♀ of *tenuisetosus*. SUDAN : Wad Medani, *Dolichos lablab*, 7.iv.1932 (A. P. G. Michelmores).

***Haplothrips robustus* Bagnall**

- Haplothrips robustus* Bagnall, 1918a : 209-210.  
*Haplothrips melanoceratus* Bagnall, 1918a : 210. **Syn. n.**  
*Haplothrips* ? *clarisetis* O'Neill, 1960 : 507-510.

This species is apparently common in South Australia on many flowers and there is considerable size variation in the specimens available to the present author. The tip of the aedeagus is triangular and the species can further be distinguished from *clarisetis* Pr. by ; 1. tergite IX median setae softly rounded not acute at apex ; 2. basal wing seta III not much longer than II ; 3. male pronotal anteromarginal setae much weaker than antero-angulars. The species recorded by O'Neill from North America as ? *clarisetis* is very probably *robustus*, but males have not been found and it is possible that further closely related species will be found in Australia. *H. melanoceratus* was described from a single female with uniformly dark antennae taken with *robustus* females which have rather paler antennals III.

Holotype ♀. SOUTH AUSTRALIA : Adelaide, Mt. Lofty Range, flowers of *Acacia myrtifolia* or *Epachris impressa*, 9.viii.1914 (E. B. Poulton).

Holotype ♀ of *melanoceratus*. SOUTH AUSTRALIA : Adelaide, Outer Harbour, flowers of *Mesembryanthemum*, 28.viii.1914 (E. B. Poulton).

***Haplothrips senecionis* Bagnall**

- Haplothrips senecionis* Bagnall, 1932a : 164.

This species apparently differs from *distinguendus* in having softly rounded apices to the major setae. It is related to both *verbasci* Osborn and *marrubiicola*, and has been recorded from both Britain and France. There are four slides bearing both sexes and labelled 'paratypes' in the Bagnall collection.

Paratypes ♂♂ and ♀♀. SCOTLAND : Kinghorn, *Senecio jacobea*, vii.1930 (R.S.B.).

***Haplothrips setiger* Priesner**

- Haplothrips trifolii* var. *setiger* Priesner, 1921a : 11.  
*Haplothrips plumociliatus* Maltbaek, 1931 : 3. **Syn. n.**  
*Haplothrips sedicola* Bagnall, 1933a : 317-318. **Syn. n.**  
*Haplothrips tenuicornis* Bagnall, 1933a : 318-319. **Syn. n.**  
*Haplothrips uzelianus* Bagnall, 1933a : 317-318. **Syn. n.**

The above synonymy is based on a comparison of material from Austria determined as *setiger* by Dr. H. Priesner with two syntypes of *plumociliatus* and the type material of the three Bagnall species. Priesner (1964 : 151) separates *plumociliatus* on the grounds that the epimeral setae are pointed, but the major setae of *setiger* are finely chisel-shaped and therefore appear flattened or pointed depending on the position from which they are viewed. In typical forms of this species only the epimeral setae are larger than the pronotal discal setae, but in some specimens labelled *sedicola* by Bagnall (not the type series from White Sedum) the anterior and posterior angular setae are almost half as long as the epimerals. In most of the specimens of *sedicola* the epimerals are 85 $\mu$  long and in none of the available specimens are these setae more than 95 $\mu$ . Bagnall's record of *setiger* on *Sedum* at l'Hospitalet (1933a : 323) is a mis-identification of *maltbaeki*.

Syntypes ♂ and ♀ of *plumociliatus*. SPAIN : St. Helena, *Anthemis*.

LECTOTYPE ♀ of *sedicola*. FRANCE : Ax-les-Thermes, White Sedum, viii.1926 (R.S.B.).

Holotype ♀ of *tenuicornis*. FRANCE : Canet Plage, nr. Perpignan, *Lotus*, viii.1926 (R.S.B.).

LECTOTYPE ♂ of *uzelianus*. CZECHOSLOVAKIA : Vsetin, ix.1929 (R.S.B.).

***Haplothrips silhouettensis* Bagnall**

*Haplothrips silhouettensis* Bagnall, 1921b : 268-269.

Five of the original eight specimens have been examined and they all lack antennae, postocular and basal wing setae, as well as the setae on tergite IX and the tube. There is only one major pronotal seta available between all the specimens, this is dark with an expanded apex.

LECTOTYPE ♂. SEYCHELLES : Silhouette, Mare aux Cochons, ix.1908 (*H. Scott*).

***Haplothrips sorghi* Bagnall**

*Haplothrips sorghi* Bagnall, 1933a : 331-332.

Although related to *priesnerianus*, this species has dark major setae and the third subbasal wing setae are strongly expanded apically. *H. cahirensis* (Trybom) may be a senior synonym.

LECTOTYPE ♂. SUDAN : Blue Nile Province, Darwish, *Sorghum*, [ix.1931] (*W. P. L. Cameron*).

***Haplothrips sorghicola* Bagnall***Haplothrips sorghicola* Bagnall, 1933a : 332-333.*Haplothrips confinis* Priesner, 1950 : 79-80. **Syn. n.**

The above synonymy is based on a comparison of Bagnall's unique holotype with Priesner's description of *confinis*, and a series of specimens from Segou, Mali Republic. Several of Bagnall's measurements of the holotype are overestimated, thus the three subbasal wing setae are 32 : 35 ; 48 $\mu$  in length, and the postocular setae 42 $\mu$  arising 15 $\mu$  behind the eye. The species differs from *priesnerianus* in having yellow apices to the tibiae.

Holotype ♀. SUDAN : Blue Nile Province, Darwish, *Sorghum*, [ix.1931] (*W. P. L. Cameron*).

***Haplothrips tenuipennis* Bagnall**

(Text-fig. 46)

*Haplothrips tenuipennis* Bagnall, 1918a : 210-211.*Haplothrips ceylonicus* var. *mangiferae* Priesner, 1933 : 359. **Syn. n.**

The present author has not seen any specimens of *ceylonicus* which bear the original data given by Schmutz (1913 : 1039), but most of the material from India in the British Museum collection labelled *ceylonicus* is here regarded as conspecific with *tenuipennis*. Paratypes of *mangiferae* have been examined. Contrary to Ananthakrishnan (1964 : 48) antennals III to VI are yellow, as are the tarsi and the apices of the middle and hind tibiae. The median setae on tergite IX are shorter than the tube, the third subbasal wing seta is acute, and the inner sense cone on antennal III is smaller than the outer. The shaft of the aedeagus is slightly curved upwards but the extreme tip is weakly expanded and turned down.

LECTOTYPE ♂. INDIA : Darjeeling District, Ringtong Tea Estate, on rose, 14.vi.1916 (*E. A. Andrews*).

Paratypes ♀ of *mangiferae*. JAVA : Semarang, *Mangifera indica* flowers, 25.viii.1912 (*van Leeuwen*).

***Haplothrips tertius* Bagnall**

(Text-fig. 48)

*Haplothrips (Trybomiella) tertius* Bagnall, 1934b : 484-485.

The present author has collected this species commonly at Wad Medani, Sudan, on the flowers of garden Zinnias. It can be distinguished most readily from *articulosus* by the spoon-shaped aedeagus tip. The type specimen is not in the Paris Museum or the British Museum (Natural History).

Paratypes ♂♂ & ♀♀. MALI : Koulikoro, *Chrysanthemum procumbens*, 1.vii.1913 (*J. Vuillet*).

***Haplothrips victoriensis*** Bagnall

*Haplothrips victoriensis* Bagnall, 1918a : 208-209.

This large dark species has a wide and stout maxillary bridge and the stylets are also rather stouter than usual. The major setae are all dark with broadly expanded apices, except the third subbasal wing seta which is pale and softly pointed.

LECTOTYPE ♂. AUSTRALIA : Victoria, Healesville, *Prostanthera lasiantha*, 18.xii.1915 (R. Kelly).

***HOLUROTHRIPS*** Bagnall

*Holurothrips* Bagnall, 1914f : 376. Type-species *H. ornatus*, by monotypy.

This genus is near *Hystricothrips* Karny from which it can be distinguished by the longer and less hairy tube. The genus may be defined as follows.

Head widest across eyes, slightly narrowed basally, interocellar projection about two thirds as long as rest of head. Two pairs of interocellar setae, one pair of postocellars, and two pairs of postocular setae ; cheeks with one stout seta just beyond eye. Antennae eight-segmented, III and IV with two sense cones. Pronotal antero-angular setae close to midlaterals ; praepectus present, mesopraesternum not seen, metanotum reticulate. Pelta broad, tergites IV and V with three pairs of wing retaining setae, tergite IX with B<sub>1</sub> and B<sub>2</sub> setae short and stout ; tube long, curved ventrally, setose in basal four fifths.

***Holurothrips ornatus*** Bagnall

*Holurothrips ornatus* Bagnall, 1914f : 376-377.

*Holurothrips leeuweni* Priesner, 1934b : 62-63. **Syn. n.**

This synonymy is based on a comparison of the two original specimens with three paratypes of *leeuweni*. Bagnall's specimens are macropterous, but most of the differences indicated by Priesner are due to the fact that *ornatus* was described from dry carded specimens and *leeuweni* from specimens on slides. The lateral abdominal, and marginal wing retaining setae are pale yellow in both forms, but the accessory wing retaining setae are black.

LECTOTYPE ♂. SARAWAK : Matang, 1,000 ft., in decaying leaves, 2.xii.1913 (G. E. Bryant).

***Hoplandrothrips bidens*** (Bagnall)

*Acanthothrips bidens* Bagnall, 1910g : 374-375.

*Hoplandrothrips ellisi* Bagnall, 1914a : 35-37. **Syn. n.**

*Hoplandrothrips collinsi* Bagnall, 1914a : 37-38. **Syn. n.**

*Phloeothrips parvulus* Bagnall, 1927b : 584-585. **Syn. n.**

This species apparently varies considerably in size and colour. In gynaecoid males the fore femoral tubercles are not developed. The author is grateful to Dr. G. D. Morison for his comments on this synonymy. The holotype male of *collinsi* was taken with the type series of *ellisi* but is mounted on a blackened slide and is spoiled.

Holotype ♂. HUNGARY : Budapest, in moss, 4.xii.1905 (*Biro*).

Paratypes ♂ of *ellisi*. ENGLAND : Warwickshire, Balsall Common, dead branches, ix.1913 (*R.S.B.*).

Holotype ♂ of *parvulus*. FRANCE : Plage d'Hyères, *Pinus halepensis*, ix.1927 (*R.S.B.*).

### ***Hoplandrothrips brunneicornis* Bagnall**

*Hoplandrothrips brunneicornis* Bagnall, 1917 : 23-24.

Holotype ♂. WEST INDIES : St. Vincent (*H. H. Smith*).

### ***Hoplandrothrips coffeae* Bagnall**

(Text-fig. 49)

*Hoplandrothrips coffeae* Bagnall, 1929d : 75-76.

This species is similar to *flavipes* in that antennal III is short and broad, the width is about three quarters the length, but it differs from both *marshalli* Karny and *ugandensis* Priesner in having the pronotal anteromarginal setae developed, about half as long as the antero-angulars.

Syntypes ♂ & ♀. TANGANYIKA : Bukoba, Kamachumu, curling leaves of coffee, ix.1926 (*A. H. Ritchie*).

### ***Hoplandrothrips flavipes* Bagnall**

(Text-fig. 50)

*Hoplandrothrips flavipes* Bagnall, 1923c : 628-629.

This species differs from *coffeae* not only in the bright yellow tibiae, but also in having four short fat sense cones on antennal III. The sensoria on IV are normal and slender however, unlike *gracillicornis* Priesner.

Holotype ♀. KENYA : Kijalie, Kikuyu Escarpment, xii.1911 (*Alluaud & Jeannel*).

### ***Hoplandrothrips hoodi* Bagnall**

(Text-fig. 51)

*Hoplandrothrips hoodi* Bagnall, 1913f : 297-298.

This differs from the other described East African forms in the long antennal III, 2.5 times as long as wide. The pronotal anteromarginal setae are well developed and the hind tibiae are brown medially.

Syntypes ♂♂ & ♀. TANGANYIKA : Arusha, x-xi. 1905 (*Katona*).



***Hoplandrothrips hystrix* Bagnall**

(Text-fig. 52)

*Hoplandrothrips hystrix* Bagnall, 1929d : 74-75.

This species resembles *marshalli* Karny and *ugandensis* Priesner in having the pronotal anteromarginal setae reduced and the antero-angulars very long, arising at some distance from the pronotal fore margin. Antennal III is long, more than twice as long as broad.

Syntypes ♂. SIERRA LEONE : Njala, on Grapefruit bark, 10.iv.1927 (*E. Hargreaves*).

***Hoplandrothrips trybomi* (Bagnall) comb. n.**

(Text-fig. 53)

*Cryptothrips trybomi* Bagnall, 1913f : 295.

The eyes are rather small and the antennae long, but otherwise this species fits well into the genus *Hoplandrothrips*. The maxillary stylets are retracted far into the head and lie close together in the mid line.

Holotype ♀ (not ♂). TANGANYIKA : Moschi, 15.viii.1905 (*Katona*).

***Hoplandrothrips xanthopoides* Bagnall***Hoplandrothrips xanthopoides* Bagnall, 1917 : 22-23.

Holotype ♂. WEST INDIES : St. Vincent (*H. H. Smith*).

**HOPLOTHRIPS Amyot & Serville**

*Hoplothrips* Amyot & Serville, 1843. Type-species *Trips corticis* De Geer, designated by Karny, 1912e.

*Hoplothrips* Amyot & Serville ; Mound, 1966c : 126-128.

*Dolerothrips* Bagnall, 1910d : 682-683. Type-species *D. flavipes*, by original designation.

Bagnall described nine species under *Dolerothrips* and two under *Trichothrips* from the Hawaiian Islands, but these species are in need of further study and comparison with fresh material. The original specimens are fragmentary, and since the time of their description, studies on European and North American members of the genus have shown that species can vary considerably depending on the season and degree of wing development. *H. flavipes* is probably distinct, but *barbatus* is an oedymmerous male and probably belongs with one of the other forms. *H. perkinsi* and *laticornis* differ from the other species in not having the base of antennals IV and V yellow. However the length of the abdominal setae is of doubtful value on the available material. The species were described from carded specimens which have now been mounted on slides, and further study suggests that certain setae are not 'obsolete' as described but broken. All the specimens have minor anteromarginal pronotal setae, and the antero-angulars are short except in two oedymmerous males.

***Hoplothrips angusticeps*** (Bagnall)

*Dolerothrips angusticeps* Bagnall, 1910d : 688.

One micropterous male without antennae remains in the collection.

LECTOTYPE ♂. HAWAII : Molokai, Kalae, 7.viii.1893 (*Perkins* 172).

***Hoplothrips barbatus*** (Bagnall)

*Dolerothrips barbatus* Bagnall, 1910d : 683-684.

Holotype ♂. HAWAII : Kona, 4,000 ft., under rotting log, ix.1892 (*Perkins*).

***Hoplothrips bicolor*** (Bagnall)

*Dolerothrips bicolor* Bagnall, 1910d : 688-689.

The colour of the unique micropterous female, which lacks antennae, does not appear to differ radically from the other Hawaiian forms such as *barbatus*, *dubius* and *ovatus*.

Holotype ♀. HAWAII : Oahu, Kaala Mts., 2,000 ft., i.1893 (*Perkins* 56).

***Hoplothrips dubius*** (Bagnall)

*Dolerothrips dubius* Bagnall, 1910d : 691.

Only one macropterous female of this species remains in Bagnall's collection.

LECTOTYPE ♀. HAWAII : Molokai Mts., 4,500 ft., 21.xi.1893 (*Perkins*).

***Hoplothrips flavipes*** (Bagnall)

*Dolerothrips flavipes* Bagnall, 1910d : 685-686.

Of the four females and one male, all micropterae, labelled *flavipes* in Bagnall's collection only one female specimen has not been treated with strong caustic alkali and this is here designated as lectotype. The figure in Zimmermann (1948 : 402) by Bianchi and labelled *flavipes* Bagnall is almost certainly not this species. In *flavipes* the postocular setae are softly pointed and their length is about equal to half the head width. The epimeral and postero-angular pronotal setae are equal in length to the postoculars, but the midlaterals are rather longer. The antero-angulars are small except in one oedymorous male, in which they are about half as long as the postoculars. None of the *Hoplothrips* species described by Bagnall from Hawaii have pronotal setae as figured by Bianchi, moreover antennal VIII is constricted basally in lateral view in *flavipes* (cf. Zimmermann, 1948 : 393).

LECTOTYPE ♀. HAWAII : Maui, Haleakala, 5,000 ft., iv.1894 (*Perkins*).

***Hoplothrips intermedius*** (Bagnall)

*Dolerothrips intermedius* Bagnall, 1910d : 689-690.

The tube has been lost from the unique male on which this species is based.

Holotype ♂. [HAWAII : Maui, Haleakala, 3,000 ft.] (*Perkins* 809).

***Hoplothrips lanaiensis*** (Bagnall)

*Dolerothrips lanaiensis* Bagnall, 1910d : 690-691.

This species is represented in Bagnall's collection by two female and one male micropterae.

LECTOTYPE ♂. HAWAII : Lanai, 2,000 ft., i.1894 (*Perkins*).

***Hoplothrips laticornis*** (Bagnall)

*Trichothrips laticornis* Bagnall, 1910d : 692-693.

The broad head of the unique holotype may be an artefact due to pressure when the specimen was mounted.

Holotype ♀. HAWAII : Kona, 3,000 ft., ix.1892 (*Perkins*).

***Hoplothrips longisetis*** (Bagnall)

*Trichothrips longisetis* Bagnall, 1910f : 662-663.

*Hoplothrips* (*Maderothrips*) *longisetis* (Bagnall) Priesner, 1964 : 203.

Holotype ♂. ENGLAND : Durham, Gibside, 1907 (*R.S.B.*).

***Hoplothrips melanurus*** (Bagnall)

*Trichothrips melanurus* Bagnall, 1919 : 276-277.

Bagnall compared this species to *semicaecus* Uzel, from which it differs in the longer and less pedicelate antennal segments, and the absence of accessory sensoria on antennals IV and V.

Holotype ♀. AUSTRALIA : Victoria, Fern Tree Gulley, under dead *Eucalyptus* bark, 27.x.1913 (*F. Spry*).

***Hoplothrips nigricans*** (Bagnall)

*Trichothrips nigricans* Bagnall, 1910d : 693-694.

Bagnall described this species from one macropterous female without antennae. It is very closely related to the other Hawaiian forms and may be the macroptera of *bicolor* with which it was apparently collected.

Holotype ♀. HAWAII : Oahu, Kaala Mts., 2,000 ft., i.1893 (*Perkins* 56).

***Hoplothrips ovatus*** (Bagnall)

*Dolerothrips ovatus* Bagnall, 1910d : 686-687.

Two male and one female micropterae remain in Bagnall's collection.

LECTOTYPE ♂. HAWAII : Maui, Haleakala, 9,000 ft., 11.iv.1894 (*Perkins* 124).

***Hoplothrips pedicularius*** (Haliday)

*Phlaeothrips pedicularius* Haliday, 1836 : 441.

*Trichothrips propinquus* Bagnall, 1910f : 661-662.

*Trichothrips britteni* Bagnall, 1926f : 284-285.

Two of the four original specimens of *propinquus* have been studied. These are macropterous females from which the wings have been broken, not apterae as described.

LECTOTYPE ♀ of *britteni*. ENGLAND : Oxford, Shotover, dead oak stump, 4.iii.1916 (*H. Britten*).

Syntypes ♀ of *propinquus*. ENGLAND : Durham, Gibside, iv.1909 (*R.S.B.*).

***Hoplothrips perkinsi*** (Bagnall)

*Dolerothrips perkinsi* Bagnall, 1910d : 687-688.

The antennae are missing from the unique holotype but they were described as being brown with the basal part of III yellowish.

Holotype ♀. HAWAII : Lanai, 2,000 ft., xii.1893 (*Perkins* 92).

***Hoplothrips poultoni*** (Bagnall)

*Trichothrips poultoni* Bagnall & Kelly, 1929b : 90-91.

Holotype ♀. AUSTRALIA : Victoria, flew onto newspaper, 9.xii.1927 (*R. Kelly* ns 45).

***Hoplothrips semicaecus*** (Uzel)

*Trichothrips semicaeca* Uzel, 1895 : 249-250.

*Trichothrips amabilis* Bagnall, 1926f : 283-284.

*Hoplothrips semicaecus* (Uzel) ; Priesner, 1964 : 195.

Holotype ♀ of *amabilis*. ENGLAND : Surrey, Gomshall, on hazel sticks, 5.ix.1926 (*R.S.B.*).

**HYSTRICOTHRIPS** Karny

*Hystricothrips* Karny, 1912c : 132. Type-species *H. phasgonura*, by monotypy.

*Zeugmatothripoides* Bagnall, 1929d : 71-72. Type-species *Z. africanus*, by monotypy. **Syn. n.**

The original specimen upon which *Hystricothrips* was based has not been examined by the present author, but Bagnall's species from Sierra Leone fits so closely to

Karny's figure and description of *phasgonura* from Spanish Guinea that there can be little doubt as to the generic synonymy. The genus is close to *Holurothrips*, which is also based on specimens from leaf litter, but it can be recognized by the completely setose tube and may be defined as follows :

Head broadest across eyes, narrowed basally, weakly extended in front of eyes ; no major interocellar setae, one pair of postocellars and one pair of very long postocular setae ; cheeks with two pairs of stout major setae on tubercles. Antennae eight-segmented, VIII weakly narrowed basally ; I with two stout dorsal setae, II with one dorsal seta extending almost to apex of III ; two sense cones on both III and IV. Pronotum transverse, epimeral sutures complete, antero-angular seta close to midlateral. Pelta broad, abdominal tergites with two pairs of wing retaining setae, the anterior pair short and straight ; tube narrowed apically, densely clad with setae which are as long as the width of the tube.

### *Hystriothrips africanus* (Bagnall) **comb. n.**

*Zeugmatothripoides africanus* Bagnall, 1929d : 72-73.

Accessory cilia cannot be observed on the fore wings of the unique holotype as these are folded, extending to the posterior margin of tergite VI. The only other two specimens known are brachypterous and micropterous and hence would not be expected to bear accessory fore wing cilia. *H. phasgonura* Karny was described as having twenty three accessory cilia and the body colour was given as dark brown, whereas the *africanus* specimens are yellow with brown markings. From the gut contents it is evident that the species feeds on spores, and the two specimens referred to above were taken on *Cola* leaf litter at Ibadan, Nigeria. The larvae bear numerous very long capitate setae and there is a long seta on antennal III extending to the apex of the antenna.

Holotype ♀. SIERRA LEONE : Njala, *Cola*, 17.viii.1928 (*E. Hargreaves*).

### **IDOLOTHRIPS** Haliday

*Idolothrips* Haliday in Walker, 1852 : 1096. Type-species *I. spectrum* Haliday, designated by Froggatt, 1904.

*Idolothrips* Haliday ; Froggatt, 1904 : 54-57.

*Acanthinothrips* Bagnall, 1908c : 207. Type-species *I. spectrum* Hal., by monotypy.

*Idolothrips* Haliday ; Bagnall, 1916b : 404.

Comparisons with *Idolothrips* can be found under *Elaphrothrips* and *Meiothrips*. Most of the species originally assigned to *Idolothrips* have been removed to *Elaphrothrips*, and the present author has not examined any species that can be placed in *Idolothrips* other than the type, *spectrum*, and its synonyms from Australia. The genus may be defined briefly as follows :

Head long, weakly constricted medially and projecting slightly in front of eyes ; dorsal surface transversely striate ; two pairs of postocular setae, one behind the other ; cheeks with about twelve pairs of stout pale setae ; inter- and postocellar setae stout ; maxillary stylets broad, V-shaped, low in head ; antennae long. Pronotum transverse, sculptured, epimeral suture incomplete posteriorly ; all major setae well developed, antero-angular close to midlateral, two pairs of major epimeral setae. Praepectus present, large but weakly sclerotized, meso-

praesternum broad. Metanotal setae far apart, not enlarged. Fore wing rather pointed apically with more than sixty accessory cilia. Fore tarsi unarmed; external surface of femora angular each angle bearing a stout seta. Pelta very broad, trilobed. Posterolateral angles of tergites produced, strongly in males, weakly in females. Tube hairy in basal two thirds.

***Idolothrips spectrum* Haliday**

(Text-fig. 55)

*Idolothrips spectrum* Haliday in Walker, 1852 : 1097.

*Idolothrips marginata* Haliday in Walker, 1852 : 1096. **Syn. n.**

*Idolothrips lacertina* Haliday in Walker, 1852 : 1097. **Syn. n.**

*Idolothrips spectrum* Haliday; Froggatt, 1904 : 54-57.

*Idolothrips marginatus* f. *invalida* Priesner, 1928b : 654.

*Idolothrips lacertinus* f. *infirma* Priesner, 1928b : 654.

*Idolothrips kellyanus* Bagnall, 1932e : 518-519. **Syn. n.**

In his original description Haliday indicated the possibility that *marginata* represented the female and *spectrum* and *lacertina* the male. Froggatt concluded from his field studies that only one species was involved and selected the name *spectrum*. Bagnall (1916) rejected this however and recognized two species under the names *marginata* and *lacertina*, and separated them on the form of the male lateral abdominal tubercles. Priesner further distinguished these forms on the ratio of head length to width. The present author has examined many specimens from Australia and these two forms are to be found in the same population. The male tubercles and setae sometimes do not correspond on opposite sides of the body (Text-fig. 55) and the variation is correlated with body size. The colour of the stem of antennal VI varies from yellow to brown in the material examined, and so *kellyanus* is here interpreted as a small female of *spectrum*.

Holotype ♀ of *kellyanus*. SOUTH AUSTRALIA: Lyrup, nr. Renmark, River Murray, dead leaves of *Eucalyptus melliodora* (R. Kelly).

**ISOPTEROTHRIPS Bagnall**

*Isopterothrips* Bagnall, 1926d : 553. Type-species *I. tenuipennis*, by monotypy.

This genus is very close to *Diceratothrips*, but may be distinguished by the narrow base of the long tarsal tooth, the pelta with very slender lateral lobes, and antennal IV with only three sense cones. The fore coxae bear six or more short stout setae on the posterior margin, and in the male there is in addition a group of about five setae directed anterolaterally.

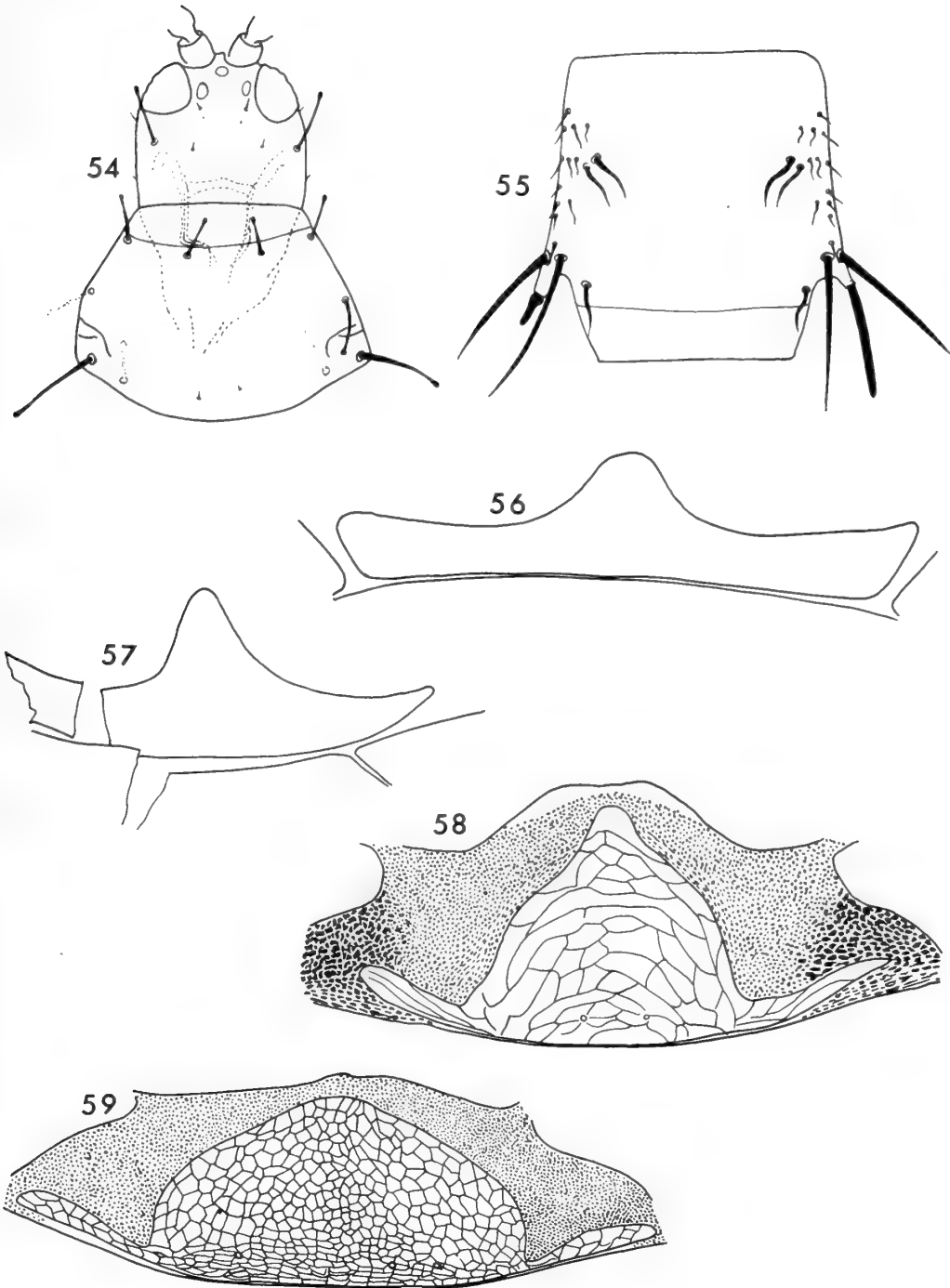
***Isopterothrips tenuipennis* Bagnall**

(Text-figs. 56-58 & 73)

*Isopterothrips tenuipennis* Bagnall, 1926d : 554.

*Dichaetothrips penicillatus* Priesner, 1937b : 626-629. **Syn. n.**

The fore wings are colourless in this species and the tube is sculptured. The postocellar setae are about as long as one side of the ocellar triangle, but the posterior dronotal setae are



FIGS. 54-59. Fig. 54. *Mimothrips hargreavesi*, head and pronotum to show maxillary bridge. Fig. 55. *Idolothrips spectrum*, tergite VII of male with dissimilar postero-angular setae. Figs. 56-58. *Isopterothrips tenuipennis*: 56, Mesopraesternum of female. 57, Mesopraesternum of male. 58, Pelta. Fig. 59. *Lamillothrips typicus*, pelta.

very long, particularly the midlateral setae of the male. The anterior margin of the mesosternum is only half as wide in the male as in the female, the mesopraesterna therefore differ considerably in shape between the sexes.

Holotype ♀. GHANA : Aburi, in shot hole borer's tunnel in dead *Loranthus* stem on *Hevea*, 3.xii.1915 (*W. H. Patterson*).

Holotype ♂ of *penicillatus*. SIERRA LEONE : Njala, in twigs of *Bauhinia tomentosa*, 1936 (*E. Hargreaves*).

***Karnyothrips duplicatus* (Bagnall) comb. n.**

*Podothrips duplicatus* Bagnall, 1918a : 211-213.

Most of the major setae are missing from the unique holotype, and the only two remaining are on the pronotum. These setae are widely expanded suddenly at the apex as in *flavipes* Jones, and the stout hind femora and short tube also recall that species. In *duplicatus* however the mesopraesternum is not reduced medially and the pronotal anteromarginal setae are not small.

Holotype ♀. GHANA : Aburi, Canna flowers, 30.xi.1915 (*W. H. Patterson*).

***Karnyothrips flavipes* (Jones)**

*Anthothrips flavipes* Jones, 1912 : 18-19.

*Haplothrips longisetis* Bagnall, 1913f : 297.

The genus *Karnyothrips* Watson, 1923 with *flavipes* as type-species, is here accepted as a valid genus for a small group of *Haplothrips*-like species with stout hind femora and apical setae longer than the tube.

Holotype ♀ of *longisetis*. EGYPT : Alexandria, dead twig of Fig, 6.iii.1905 (*F. V. Theobald*).

***Karnyothrips melaleucus* (Bagnall)**

*Hindsiana melaleuca* Bagnall, 1911c : 61-62.

Although described from a single specimen taken in a European glasshouse, Priesner (1964) states that this species occurs in Africa, India and North America.

Holotype ♀. DENMARK : Copenhagen, on cruciferous flower in Palm House, 30.vi.1909 (*R.S.B.*).

**KELLYIA** Bagnall

*Kellyia* Bagnall, 1929h : 188-189. Type-species *Teuchothrips hoodianus*, by monotypy.

This is distinguished from *Teuchothrips* by its longer head and antennae. The type-species shares the following characters with *Teuchothrips* species ; antennae eight-segmented, VII and VIII closely united ; one sense cone on III, three major sense cones on IV ; maxillary stylets approach each other in middle of head ; fore tarsus with a stout claw ; praepectus absent, mesopraesternum degenerate medially ; pronotum with longitudinal median line thickened ; pelta triangular with apical margin transverse ; tergites with two pairs of wing retaining setae ; body surface reticulate ; tube weakly constricted apically.



***Kellyia hoodianus*** (Bagnall)

*Teuchothrips hoodianus* Bagnall, 1924k : 630-631.

LECTOTYPE ♂. AUSTRALIA : Victoria, Lake Tyers, *Acacia elata*, 21.ii.1919 (R. Kelly).

***Kladothrips acallurus*** Bagnall

*Kladothrips acallurus* Bagnall, 1932e : 507-509.

This species is very similar to *rodwayi* Hardy, of which it is possibly a synonym. The postocular setae are well developed, broadly expanded apically and almost reach the posterior margin of the eye.

LECTOTYPE ♂. AUSTRALIA : without data (Kelly ns 133).

***Kladothrips differens*** Bagnall

*Kladothrips differens* Bagnall, 1932e : 509.

This species has similar postocular setae to *acallurus* but these arise far behind the eye. The species *froggatti*, *intermedius* and *tepperi* Karny have no major postocular setae.

Holotype ♂. AUSTRALIA : without data (Kelly ns 133?).

***Kladothrips froggatti*** Bagnall

*Kladothrips froggatti* Bagnall, 1929h : 196.

This is close to *tepperi* Karny and *intermedius*, and further material is required to define them clearly. Major postocular setae are absent in each of these forms.

Syntypes ♀. AUSTRALIA : Tasmania, in *Acacia* sp. galls, 7.ix.1903 (A. M. Lea).

***Kladothrips intermedius*** Bagnall

*Kladothrips intermedius* Bagnall, 1929h : 196-197.

Intermediate in size between *tepperi* Karny and *froggatti*, it is possible that these three forms are identical.

LECTOTYPE ♀. AUSTRALIA : Victoria, Melbourne, on *Acacia* sp. (E. T. Carter).

**KLEOTHRIPS** Schmutz

*Kleothrips* Schmutz, 1913 : 1057-1058. Type-species *K. gigans*, by monotypy.

*Dracothrips* Bagnall, 1914c : 290. Type-species *D. ceylonicus*, by monotypy.

*Kleothrips* Schmutz ; Priesner, 1934-1935.

Bagnall (1915c : 269) subsequently indicated that *ceylonicus* was a synonym of *gigans*. Both species were collected at the same locality, Peradeniya, Ceylon. The genus should be compared to *Mecynothrips* (q.v.).

***Kleothrips gigans* Schmutz**

*Kleothrips gigans* Schmutz, 1913 : 1058-1062.

*Dracothrips ceylonicus* Bagnall, 1914c : 290-291.

The two original specimens of *ceylonicus* have apparently been lost. The original data were ; CEYLON : Peradeniya, swept from bushes (*E. E. Green* 2961). Priesner indicates that *gigans* always has a small tooth at the base of the fore tibia of the male, but a gynaecoid male apparently of this species from Ceylon is in the British Museum (Natural History) and lacks all trace of the tooth. *K. simplex* may be a synonym of *gigans* but further series are essential to establish the range of variation.

***Kleothrips simplex* (Bagnall)**

*Mecynothrips simplex* Bagnall, 1912a : 216.

As indicated above the unique male of this species is very similar to *gigans* Schmutz, of which it may prove to be a synonym.

Holotype ♂. PHILIPPINES : without data (*E. Simon*).

**KOPTOTHRIPS Bagnall**

*Koptothrips* Bagnall, 1929h : 197. Type-species *K. flavicornis*, by monotypy.

The unique male upon which this genus is based is contracted and crushed. The praepectus is apparently absent, the pelta small and triangular, and the abdominal tergites bear two pairs of wing retaining setae. A redefinition of the genus must await the collection of further material.

***Koptothrips flavicornis* Bagnall**

*Koptothrips flavicornis* Bagnall, 1929h : 197-198.

Holotype ♂. AUSTRALIA : Victoria, Gippsland, *Acacia* sp. (*C. French*).

**LAMILLOTHRIPS Bagnall**

*Lamillothrips* Bagnall, 1923c : 630-631. Type-species *L. typicus*, by original designation.

This genus is very similar to *Machatothrips* but differs in having more than one pair of wing retaining setae on the tergites, and the lateral expansions of the pelta are typically slender. *Hyllothrips* Priesner, 1932c, may be a synonym as one male in the Paris Museum collection labelled *Hyllothrips vitulus* (Karny) by Priesner is congeneric with *typicus*. The anterolateral margins of the pronotum are expanded into distinct flanges in the male but only weakly expanded in the female. Similarly the tubercle which bears the epimeral seta is much larger in the male than in the female.

***Lamillothrips typicus*** Bagnall

(Text-fig. 59)

*Lamillothrips typicus* Bagnall, 1923c : 631.*Lamillothrips pennicollis* Bagnall, 1923c : 631. **Syn. n.***Machatothrips longidens* Bagnall, 1934b : 491-492. **Syn. n.**

The three specimens upon which Bagnall erected the two species of *Lamillothrips*, together with the holotype of *longidens*, form a continuous gradation in size. There is no good reason for regarding the largest specimen as a different species from the smallest. The epimeral tubercles bear two pairs of major setae.

LECTOTYPE ♂. GHANA : Aburi, in tunnel of *Cacao* moth borer, 17.xi.1915 (*W. H. Patterson*).

Holotype ♂ of *pennicollis*. GHANA : Aburi, in tunnel of *Cacao* moth borer, 17.xi.1915 (*W. H. Patterson*).

Holotype ♂ of *longidens*. SIERRA LEONE : Njala, xi.1926 (*E. Hargreaves*).

***Leeuwenia coriacea*** (Bagnall)*Panurothrips coriaceus* Bagnall, 1921a : 216-217.*Leeuwenia coriacea* (Bagnall) ; Priesner, 1929a : 449.

Two of the original four females remain in the Bagnall collection. There are no major setae on the head or the anterior margin of the pronotum, and the most closely related species appears to be *eugeniae*.

LECTOTYPE ♀. INDIA : West Dehra Dun, Karwapanny, on 'Piaman' leaves (*Iyer*).

***Leeuwenia eugeniae*** Bagnall*Leeuwenia eugeniae* Bagnall, 1924k : 640.*Leeuwenia eugeniae* Bagnall ; Priesner, 1929a : 449.

This species is very close to *coriacea* from which it differs in having shorter and less numerous setae on the tube. The antero-angular seta on the pronotum is small but arises from a relatively large base, as in *coriacea*.

LECTOTYPE ♀. INDIA : Madras, Kodaikanal, on *Eugenia* sp., 11.v.1919 (*Ramakrishna*).

***Leeuwenia indica*** Bagnall*Leeuwenia indicus* Bagnall, 1914f : 377-378.*Leeuwenia indica* Bagnall ; Priesner, 1929a : 449.

The unique holotype of *indica* has not been found in either the British Museum (Natural History) or the Indian Museum. The original published data were as follows ; BURMA : Moulmein, 16.xi.1911 (*F. H. Gravely*) (Indian Museum No. 4297/20).

***Liothrips amabilis*** Bagnall

*Liothrips amabilis* Bagnall, 1927a : 574-575.

*Liothrips amabilis* Bagnall ; Priesner, 1964 : 191-192.

Holotype ♀. FRANCE : nr. Hyères-la-Plage, *Phyllirea*, ii.1927 (R.S.B.).

***Liothrips brevicollis*** (Bagnall)

*Cryptothrips brevicollis* Bagnall, 1915e : 199-200.

*Liothrips brevicollis* (Bagnall) ; Bagnall, 1926e : 661.

The two syntypes upon which this species is based may be small forms of *austriacus* Karny. The postocular setae barely extend beyond the hind margin of the eye and the other major setae are equally short. Antennal III is about 98 $\mu$  long compared to 112-116 $\mu$  in *austriacus* (in Priesner, 1964 : 192).

Syntypes ♀. CYPRUS : *Vitis* (*Z. G. Solomides*).

***Liothrips karnyi*** Bagnall

*Liothrips karnyi* Bagnall, 1924k : 631.

*Liothrips reuteri* Karny, 1920c : 40, nec *reuteri* Bagnall, 1913.

Bagnall proposed *karnyi* as a new name for a species described by Karny from Australia.

***Liothrips kingi*** Bagnall

*Liothrips kingi* Bagnall, 1921c : 356-357.

This species has two pairs of postocular setae and the pronotal sculpture resembles that of *Gynaiokothrips* species. It is retained in *Liothrips* on account of the long pointed mouth cone, although the pale setae are also unusual in that genus. *Liothrips anogeissi* Priesner, 1965 is very closely related.

Syntypes ♂♂ & ♀♀. SUDAN : Mongalla Province, Gebel Odo, 5.i.1911 (*H. H. King*).

***Liothrips oleae*** (Costa)

*Thrips oleae* Costa, 1857 : 80-82.

*Liothrips oleae* (Costa) ; Priesner, 1964 : 190.

*Leurothrips linearis* Bagnall, 1908c : 198-199. **Syn. n.**

The original description of *linearis* states in error that wings and ocelli are absent. The wings were left in the glue on the original card mount when Bagnall prepared one specimen on a slide. These wings have now been recovered and mounted with the specimen. The postocular setae are not shorter than typical *oleae* in either of the original specimens.

LECTOTYPE ♀. GRAND CANARY : Sardilla, 1900 (*Alluand*).

***Liothrips reuteri*** (Bagnall)

*Compsothrips reuteri* Bagnall, 1913f : 295.

*Liothrips reuteri* (Bagnall) ; Priesner, 1964 : 190.

Holotype ♀. EGYPT : Suez, 4.viii.1902 (*Biro*).

***Liothrips similis*** Bagnall

(Text-fig. 69)

*Liothrips similis* Bagnall, 1910a : 383-384.

The two species *elongatus* and *intermedius* which were described with *similis* are now placed in *Trybomia*. However *similis* appears to be a true *Liothrips* although the metanotum is broadly reticulate and seta B<sub>1</sub> on tergite IX is longer than the tube.

Holotype ♀. VENEZUELA : Los Adjuntas, 10.ix.1891 (*Meinert*).

***Liothrips willcocksii*** (Bagnall)

*Gynaiokothrips willcocksii* Bagnall, 1921c : 364.

*Liothrips (Epiiothrips) willcocksii* (Bagnall) Priesner, 1965 : 396-398.

This species is of interest in the *Liothrips* group in having a fore tarsal tooth in the male.

Holotype ♀. EGYPT : Ezbst el Nakhl (*F. C. Willcocks*).

**MACHATOTHRIPS** Bagnall

*Machatothrips* Bagnall, 1908c : 189. Type-species *M. biuncinatus*, by monotypy.

*Adiaphorothrips* Bagnall, 1909j : 536-537. Type-species *A. simplex*, by monotypy.

There are more than thirty five nominal species in this genus at present, but this figure is likely to be reduced when more of the type specimens are re-examined and compared with *biuncinatus*. The genus may be defined as follows.

Large dark species ; head about two thirds as wide as long, weakly constricted basally and behind eyes ; interocellar setae long, sometimes two pairs of postoculars ; cheeks with several pairs of stout setae ; eyes not large ; antennae eight-segmented, III with two sense cones ; maxillary stylets broad, V shaped within head, mouth cone acute. Prothorax broad ; praepectus present ; mesopraesternum sexually dimorphic, anterior margin of mesosternum much narrower in male than in female (cf. *Isopterothrips*). Fore tarsus armed, tooth larger in male than in female ; fore femur with a row of tubercles on inner margin in female. Fore wing parallel-sided, narrowed in apical third ; numerous accessory cilia. Metanotum reticulate. Pelta broad ; abdominal tergites each with only one wing retaining seta ; setae on tergite IX almost as long as tube.

The four species of this genus known to the present author may be distinguished as follows:

- 1 Fore femur of female with about 20 small tubercles 6 $\mu$  in length on inner margin ; mid-dorsal setae of head less than one quarter as long as postocular setae ***antennatus***

- Fore femoral tubercles of female much larger and less numerous . . . . . 2
- 2 Mid-dorsal setae of head about two thirds as long as postoculars ; fore tarsal tooth of female small with very broad base . . . . . **biuncinatus**
- Mid-dorsal head setae shorter ; fore tarsal tooth of female large . . . . . 3
- 3 Pronotal midlateral seta more than two thirds as long as epimeral seta ; mid-dorsal head seta no larger than rest of minor head setae ; fore tarsal tooth of female longer than broad ; basal fore femoral tubercle about its own length from sub-basal tubercle . . . . . **haplodon**
- Pronotal midlateral seta about half as long as epimeral seta ; mid-dorsal head seta usually reaches base of postocular ; fore tarsal tooth of female broader than long ; first two fore femoral tubercles closer together than their length. . . . . **braueri**

### ***Machatothrips antennatus*** (Bagnall)

*Adiaphorothrips antennatus* Bagnall, 1915b : 594.

This species was described from two specimens mounted on a card. These, a male and a female, have now been mounted on slides. The very small tubercles on the fore femora of the female are quite distinctive, and in both sexes the first pair of postocular setae are about five times as long as the second pair.

LECTOTYPE ♀. SARAWAK : Matang, 1,000 ft., under bark of dead tree, 7.xii.1913 (*G. E. Bryant*).

### ***Machatothrips biuncinatus*** Bagnall

*Machatothrips biuncinata* Bagnall, 1908c : 189-190.

*Adiaphorothrips simplex* Bagnall, 1909j : 537-538. **Syn. n.**

Although this species was stated to be based on a single male, it is clear from the description and the remains of the holotype (one fore leg) that the specimen was actually a female. The second postocular seta is very long, about two thirds as long as the first postocular. The fore tarsal tooth of the female is small but with a very broad base, whereas that of the male is long and acute. The species is widespread in the Indonesian region and the present author has examined specimens from the Solomon Islands.

Holotype ♀ (fore leg only). SOUTHERN NEW GUINEA (Netherlands Expedition 1904-5).

LECTOTYPE ♂ of *simplex*. BORNEO : Sambas, v.1890 (*Th. F. Lucassen*).

### ***Machatothrips braueri*** Karny

*Machatothrips braueri* Karny, 1912a : 23-26.

*Machatothrips multidentis* Bagnall, 1934b : 487-488. **Syn. n.**

*Machatothrips paucidens* Bagnall, 1934b : 489. **Syn. n.**

*Machatothrips paucidens* var. *bicolorisetosus* Bagnall, 1934b : 489-490. **Syn. n.**

The above synonymy is based on a comparison of the type specimens of each nominal form with further material collected in Nigeria. In describing *multidentis* Bagnall compared his specimens with *haplodon* Karny not the true *braueri* as in

evident from his comments on the fore tarsal teeth. The number of tubercles on the fore femur of females in *braueri* is dependant on the size of the individual. Small females have fewer tubercles and *paucidens* is here regarded as a small form. The species is known from Sierra Leone, Ghana, Nigeria, Cameroon and Congo.

Holotype ♀. CAMEROON : Bascho, iv.1909 (*Oberlt. Bartsch S.V.*). Humboldt University Museum, Berlin.

LECTOTYPE ♀ of *multidens*. GHANA : Aburi, in tunnels of *Cacao* stem moth borer, x.1915 (*W. H. Patterson*).

LECTOTYPE ♀ of *paucidens*. GHANA : Aburi, in tunnels of *Cacao* stem moth borer, 29.x.1915 (*W. H. Patterson*).

LECTOTYPE ♀ of *bicolorisetosus*. SIERRA LEONE : Njala, in tunnels of Coffee twig borer, 7.i.1927 (*E. Hargreaves*).

### *Machatothrips haplodon* Karny stat. n.

*Machatothrips braueri* var. *haplodon* Karny, 1925a : 141.

*Machatothrips braueri* var. *buffai* Karny, 1925a : 142. **Syn. n.**

*Machatothrips simplicidens* Bagnall, 1934b : 490-491. **Syn. n.**

This species is known from Uganda and the Congo and can be recognized from *braueri* by means of the key given above.

Holotype ♀. UGANDA : Kampala, in Scolytid galleries on *Ficus ovata*, 8.viii.1921 (*H. Hargreaves*).

Holotype ♀ of *simplicidens*. FRENCH CONGO : Ntamba, River Kouilou (*H. Lecomte*). Paris Museum.

### MACROTHRIPS Bagnall

*Macrothrips* Bagnall, 1908b : 359. Type-species *M. papuensis*, by original designation.

#### *Macrothrips dubius* Bagnall

*Macrothrips dubius* Bagnall, 1908b : 361.

The unique female of this species is probably a small form of *papuensis*.

Holotype ♀. NEW GUINEA : Dorey (*Wallace*).

#### *Macrothrips papuensis* Bagnall

*Macrothrips papuensis* Bagnall, 1908b : 359-360.

*Macrothrips intermedia* Bagnall, 1908c : 187-189.

*Macrothrips papuensis* Bagnall ; Moulton, 1947 : 178-179.

The unique holotype of *intermedius* is not in the British Museum (Natural History), and the published data were ; one ? male, Friedrich-Wilhelmshafen, German New Guinea. Moulton has indicated that this species varies in size and degree of development of certain characters.

Holotype ♂. NEW GUINEA : Dorey (*Wallace*).

***Malacothrips lewisi*** (Bagnall)

*Trichothrips lewisi* Bagnall, 1914b : 30-31.

*Malacothrips lewisi* (Bagnall) ; Bagnall, 1924k : 635.

The mountant in which the unique holotype was prepared has turned black and the specimen is barely visible. The slide bears the following data ; JAPAN : Okinawa, Luchu Island (*J. E. A. Lewis*).

***MECYNOTHRIPS*** Bagnall

*Mecynothrips* Bagnall, 1908b : 356-357. Type-species *M. wallacei*, by monotypy.

The genus *Kleothrips* is very close to *Mecynothrips* and could well be treated as a synonym. *Mecynothrips* is distinguished by the presence of horns on the anterior margin of the pronotum in the male, but both genera have many characters in common. The fore ocellus is weakly developed and a pair of setae arise lateral to this ocellus and not posterolateral as in *Elaphrothrips* species. There are several pairs of long wing retaining setae arising near the lateral margins of the tergites, a character not found in *Elaphrothrips* or the more closely related *Tiarothrips*.

***Mecynothrips wallacei*** Bagnall

*Mecynothrips wallacei* Bagnall, 1908b : 357-358.

*M. bagnalli* Priesner (1935 : 335) is probably a synonym of *wallacei*. Bagnall's original figure is in error as his type specimen has two fore femoral teeth just as in Priesner's figure of *bagnalli*.

Holotype ♂. NEW GUINEA : Dorey (*A. R. Wallace*).

***Megathrips brevis*** (Bagnall) **comb. n.**

*Siphonothrips brevis* Bagnall, 1914c : 291-292.

The fragmented unique holotype may be a small specimen of *lativentris* Heeger, although the present author has not seen any other specimen of that species with such short processes on segment six.

Holotype ♂. YUGOSLAVIA : Narenta (*J. Sahlberg*).

***Megathrips honoris*** Bagnall

*Megathrips honoris* Bagnall, 1921d : 395.

This species is based on a unique male which Bagnall (1916b : 406) regarded originally as *quadrituberculatus*. The head of this specimen has been shattered but the species can be distinguished from *quadrituberculatus* as follows ; middle tibiae yellow only at extreme apex ; lateral setae on tube more than half median width of tube ; B<sub>1</sub> setae on tergite IX about one third as long as tube ; sensoria on antennals V and VI more than one third as long as these segments.

Holotype ♂. JAPAN : Kobe, iv.1915 (*J. E. A. Lewis*).



***Megathrips nobilis* Bagnall**

*Megathrips nobilis* Bagnall, 1909e : 130-131.

Priesner (1964 : 140) states that *nobilis* occurs throughout Western and Central Europe on grass, but Morison (in litt.) has found all stages on dead branches of *Salix phylicifolia* in Scotland.

LECTOTYPE ♂. ENGLAND : Cambridgeshire, Wicken. Fen, dried sedges, iv-v.1896 (*D. Sharp*).

***Megathrips quadrituberculatus* (Bagnall)**

*Idolothrips quadrituberculata* Bagnall, 1908c : 210-211.

*Megathrips quadrituberculatus* (Bagnall) ; Bagnall, 1921d : 396.

This can be distinguished from *honoris* by the greater extent of yellow colouration on the middle tibiae, shorter lateral setae on the tube, shorter B<sub>1</sub> setae on tergite IX, and shorter sensoria on antennals V and VI.

Holotype ♀. JAPAN : 7.iv.1881 (*G. Lewis*).

***Meiothrips annulipes* (Bagnall)**

*Acanthinothrips annulipes* Bagnall, 1914f : 378-379.

*Meiothrips annulipes* (Bagnall) ; Bagnall, 1934b : 494.

The genus *Meiothrips* is related to *Idolothrips* in the possession of praepectal plates, a broad mesopraesternum, two pairs of postocular setae and the proximity of the pronotal anteroangular and midlateral setae. *Meiothrips* species have a pair of very large setae close together medially on the metanotum, and there is only one pair of major epimeral setae. *M. annulipes* and the type-species of the genus, *annulatus* Priesner, have no accessory cilia on the fore wing but these are present in *menoni* Ananthakrishnan according to its description.

LECTOTYPE ♂. SARAWAK : Matang, on dead bark, 13.xii.1913 (*G. E. Bryant*).

***Mesothrips jordani* Zimmermann**

*Mesothrips jordani* Zimmermann, 1900 : 16-17.

*Phlaeothrips similis* Bagnall, 1909j : 533-534. **Syn. n.**

Ananthakrishnan (1964) has indicated some of the most important characters of the genus *Mesothrips* of which *jordani* is the type-species. In this species as in several others to be included in the genus, the praepectus is present and the mesopraesternum absent medially although widely expanded laterally. The head is suddenly narrowed basally, the cheeks bear a series of setae, the postoculars are long, there are three trichomes on antennal III, and the slender maxillary stylets are wide apart low in the head. The abdominal tergites bear two pairs of wing retaining setae, and anterolateral of these are six to ten small stout setae much as in *Giganto-*

*thrips*. Bagnall's male and female syntypes have been compared with one female syntype of *jordani*.

Syntypes ♂ & ♀ of *similis*. JAVA : Semarang, young top leaves of Waringin Tree [*Ficus benjamina*] (*E. Jacobson*).

**MIMOTHRIPS** Priesner **stat. n.**

(Text-figs. 54 & 71)

*Mimothrips* Priesner, 1949 : 72, as subgenus of *Eurhynchothrips*. Type-species *Eurhynchothrips hargreavesi* Priesner, by original designation.

This genus may be distinguished from *Eurhynchothrips* by :

Antennals III and IV with two sense cones ; fore wings without accessory cilia ; pronotum with only one pair of epimeral setae ; maxillary bridge longer, the stylets farther apart in the head (Text-fig. 54). The praepectus is absent, the mesopraesternum degenerate, and the abdominal tergites bear two pairs of wing retaining setae as in *Eurhynchothrips*.

**Mimothrips longicornis** (Bagnall) **comb. n.**

*Trichothrips longicornis* Bagnall, 1913f : 298-299.

*Trichothrips longicornis* Bagnall ; Bagnall, 1918a : 215-216.

The type series of this species is mounted on a slide with the mountant blackened and opaque. The material referred to by Bagnall in 1918 from Ghana, Aburi, has been studied. This may be distinguished from *hargreavesi* as follows ; postocular setae not as long as eye ; antennal V twice as long as broad ; metanotum with reticles equiangular not longitudinal as in *hargreavesi*. The paratypes on the blackened slide are from Sierra Leone, without further data.

**MOULTONIDES** Kevan

*Moultonia* Bagnall, 1929h : 199. Type-species *Dolerothrips geijerae* Moulton, by monotypy.

*Moultonides* Kevan, 1963, nom. nov. for *Moultonia* Bagnall, nec I. Bolivar.

The type-species of this genus is known from New South Wales, Australia.

**Mystrothrips japonicus** (Bagnall) **comb. n.**

(Text-fig. 72)

*Cryptothrips japonicus* Bagnall, 1921c : 355-356.

The unique specimen upon which this species is based differs from the type-species of *Mystrothrips* in lacking a fore tarsal tooth and in having acute setae at the apex of the tube. However the body surface, particularly the tergites and sternites of the abdomen, is conspicuously reticulate and there is a single pair of postocular setae arising near the inner margin of the eye. The pronotal major setae are long except the anteromarginals, and all the major body setae have long spoon-shaped apices. The praepectus is present, the pelta broad, and the tergites bear only one pair of wing retaining setae. The wings are parallel-sided without accessory cilia, and the base of antennal III is conspicuously annulated.

Holotype ♀. JAPAN : Kobe, on grass, 23.viii.1916 (*Lewis*).

**NEOCECIDOTHRIPS** Bagnall

*Neocecidothrips* Bagnall, 1929h : 186. Type-species *Eothrips bursariae* Moulton, by monotypy.

This genus is near *Teuchothrips* from which it can be distinguished by the presence of two sense cones on antennals III and IV. The praepectus is absent and the mesopraesternum degenerate medially. The only species has been recorded from Victoria and New South Wales, Australia.

***Neoheegeria dalmatica*** Schmutz

*Neoheegeria dalmatica* Schmutz, 1909b : 344.

*Cryptothrips tenuipilosus* Bagnall, 1914c : 293-294.

The genus *Neoheegeria* is probably best used for those *Haplothrips*-like species which have three sense cones on antennal III, although this excludes the widespread species *verbasci* Osborn. The similarities between *dalmatica*, the type-species of the genus, and *verbasci* are probably superficial. The three Bagnall species treated below under *Neoheegeria* may eventually have to be placed elsewhere.

Holotype ♀ of *tenuipilosus*. GREECE : Corfu (*J. Sahlberg*).

***Neoheegeria fuscicornis*** (Bagnall) **comb. n.**

*Adraneothrips fuscicornis* Bagnall, 1929e : 606.

This species cannot be placed in *Adraneothrips* as a well developed praepectus is present on the unique holotype. It is very close to *pictipes* but has the median setae on tergite IX distinctly rounded apically not acute.

Holotype ♀. MALAYA : *Messua ferrea* (*J. M. Brander*).

***Neoheegeria pictipes*** (Bagnall) **comb. n.**

*Haplothrips pictipes* Bagnall, 1919 : 273-274.

This species has three sense cones on antennal III as in the closely related *fuscicornis*.

LECTOTYPE ♀. [INDIA : Talimparamta, Malabar, on diseased pepper berries, ix.1918 (*Ramakrishna*)]. Reg. 348.

***Neoheegeria propinquus*** (Bagnall) **comb. n.**

*Podothrips propinquus* Bagnall, 1918a : 213.

The unique holotype has three sense cones on antennal III but unlike the above two species the fore tarsi are unarmed.

Holotype ♀. GHANA : Aburi, *Cola* shoots and buds, 5.xi.1912 (*W. H. Patterson*).

**NESOTHRIPS** Kirkaldy

*Nesothrips* Kirkaldy, 1907 : 103. Type-species *N. oahuensis*, by monotypy.

*Oedemothrips* Bagnall, 1910d : 680. Type-species *O. laticeps*, by monotypy (= *oahuensis* Kirk).

*Coenurothrips* Bagnall, 1921b : 271. Type-species *C. brevicollis*, by original designation, here regarded as a synonym of *validus*.

*Nesothrips* Kirkaldy ; Stannard, 1957 : 104-106.

The name of the type-species of *Coenurothrips* is preoccupied in *Nesothrips* by *brevicollis* Bagnall, 1914. However *C. brevicollis* Bagnall, 1921 is apparently identical with *validus* Bagnall, 1921. The genus is particularly difficult because so many species have been founded on uniques or small series of specimens. Information on variation of species is lacking. *N. propinquus* is now known from South Africa, Australia and New Zealand, and may have been distributed along shipping routes in dried grass used for animal fodder. If this is so then other grass-associated species may be shown to have been described under more than one name.

***Nesothrips affinis*** (Bagnall)

*Coenurothrips affinis* Bagnall, 1921c : 361-362.

This is similar to *validus* from the Seychelles in the pronotal chaetotaxy and shape of the tube.

Holotype ?♀. CEYLON : among cotton from Hettipold Exp. Gd., 20.vi.1913 (*A. Rutherford*).

***Nesothrips brevicollis*** (Bagnall)

*Oedemothrips* (?) *brevicollis* Bagnall, 1914b : 29-30.

Antennal segments I and II are bright yellow in this species and it is very similar to *ceylonicus* Karny, 1925a. Both species were described on unique females but the B<sub>1</sub> seta on tergite IX of *brevicollis* is short, less than two-thirds as long as the tube, whereas in *ceylonicus* this seta is more than five-sixths as long as the tube. These two species are related to *N. formosensis* Priesner according to the description, and also to the forms referred to under that name by Ananthakrishnan (1964 : 102) apparently from Southern India.

Holotype ♀. JAPAN : Okinawa, Luchu Island, v.1913 (*J. E. A. Lewis*).

***Nesothrips collaris*** (Bagnall)

*Cryptothrips collaris* Bagnall, 1917 : 26-27.

The eyes are very little extended on the ventral surface of the head, less so than in *insularis*.

LECTOTYPE ♀. WEST INDIES : St. Vincent (*H. H. Smith*).

*Nesothrips insularis* (Bagnall)

*Cryptothrips insularis* Bagnall, 1914c : 295.

*Cryptothrips icarus* var. *tuberculatus* Priesner, 1922 : 105. **Syn. n.**

*Cryptothrips brachyurus* Bagnall, 1927a : 573-574. **Syn. n.**

*Nesothrips tuberculatus* (Priesner) ; Priesner, 1964 : 143.

The present author is grateful to Dr. zur Strassen for loaning specimens of *tuberculatus* and indicating the probability of this synonymy.

Holotype ♀. CANARY ISLANDS : Lancerota (*T. V. Wollaston*).

LECTOTYPE ♂ of *brachyurus*. FRANCE : Tamaris, on grass, i.iii.1927 (*R.S.B.*).

*Nesothrips minor* (Bagnall)

*Coenurothrips minor* Bagnall, 1921b : 287-288.

This may be a small form of *validus*, the antennae are paler and the unique specimen is much smaller than the available series of that species.

Holotype ♀. RODRIGUES : vii-xi.1918 (*Snell & Thomasset*).

*Nesothrips oahuensis* Kirkaldy

*Nesothrips oahuensis* Kirkaldy, 1907 : 103.

*Oedemothrips laticeps* Bagnall, 1910d : 680-681.

*Nesothrips hawaiiensis*, lapsus for *oahuensis* Kirkaldy ; Bianchi, 1944 : 31-38.

Syntype ♂ of *laticeps*. HAWAII : Oahu, Mts. nr. Honolulu, 2-3,000 ft., vii.1900 (*Perkins* no. 667).

*Nesothrips propinquus* (Bagnall)

*Oedemothrips propinquus* Bagnall, 1916b : 408-409.

*Oedemothrips propinquus* var. *breviceps* Bagnall, 1924k : 634-635.

*Oedemothrips propinquus* var. *obscuricornis* Bagnall, 1924k : 634.

*Cryptothrips dimidiatus* Hood, 1918b : 145-146. **Syn. n.**

*Oedemothrips propinquus* Bagnall ; Morison, 1931 : 453-454.

*Bolothrips dimidiatus* (Hood) Hartwig, 1948 : 116 & 124.

*Neosmerinthothrips oleriae* Moulton, 1949 : 492-494. **Syn. n.**

Type material of *dimidiatus* has not been studied. The author is grateful to Miss Anne Ward of Levin, New Zealand for material of this species and for discussing the range of variation. *N. brevicollis* and *ceylonicus* are rather similar, but in these species the lateral lobes of the pelta are joined to the median portion, whereas in *propinquus* the lateral lobes are small and quite separate from the rectangular median part of the pelta, even in the macropterous form.

Holotype ♀. AUSTRALIA : Victoria, Healesville, Badger Weir, on clover, 6.iv.1915 (*R. Kelly*).

Syntypes ♀ of *breviceps*. NEW ZEALAND: Nelson, on apricot, 26.viii.1924 (E. S. Gourley).

Paratype ♀ of *oleriae*. SOUTH AFRICA: Cape Province, Mossel Bay, vi-vii.1930 (R. E. Turner).

### *Nesothrips validus* (Bagnall)

*Coenurothrips validus* Bagnall, 1921b : 272-273.

*Coenurothrips brevicollis* Bagnall, 1921b : 271-272. **Syn. n.**

Although *brevicollis* has page priority, the name is preoccupied in *Nesothrips* and *validus* is the next available name. Bagnall described *validus* from a single specimen, and the broader head and more bulky form are apparently due to crushing during mounting.

Holotype ♀. SEYCHELLES: Silhouette [Mare aux Cochons, ix.1908].

Syntypes ♀ of *brevicollis*. SEYCHELLES: Mahé [Mount Sebert, 2,000 ft., i.1909].

### *Onychothrips hakeae* Bagnall

*Onychothrips hakeae* Bagnall, 1929h : 198-199.

Bagnall was unable to distinguish this species satisfactorily from *tepperi* Uzel, but described it as a new species on the basis of the different host association. *O. tepperi* was found on *Acacia aneura*, but Thysanoptera are not completely host specific (see *Teuchothrips pittosporiicola*) and *hakeae* is probably a synonym of *tepperi*.

LECTOTYPE ♂. AUSTRALIA: New South Wales, Broken Hill, in galls on *Hakea* sp. (O. Lower).

### *Phaulothrips caudatus* Bagnall

*Phaulothrips caudatus* Bagnall, 1932e : 510-511.

The unique holotype is shrunken and contains much white pigment internally, although it is not clear if this is an artefact. The species appears to be related to *Polyphemothrips* but agrees well with the definition of *Phaulothrips*. There is a pair of long antecellar setae with flattened apices, and antennal segments V and VI are produced distally. The postocular setae are long and arise near the inner margin of the eyes. The pelta has a slender lateral lobe on each side and the abdominal tergites apparently have only one wing retaining seta. The tube is reticulate, slightly constricted apically, and the fore wing bears about sixteen accessory cilia. The maxillary stylets are broad and fairly close together in the middle of the head.

Holotype ♀. AUSTRALIA: Victoria, Mornington, *Casuarina* branchlets, 21.x.1928 (R. Kelly).

***Phlaeothrips annulipes* Reuter**

*Phloeothrips annulipes* Reuter, 1880 : 19-21.

*Phloeothrips brevicollis* Bagnall, 1911c : 62-63. **Syn. n.**

The status of *brevicollis* was queried by Priesner (1964), and the type specimen has now been compared with a series of the common *annulipes*. The generic position of this species is doubtful, and it is here placed in *Phlaeothrips* rather than *Hoplandrothrips* on account of the broad pelta and unconstricted fore wings. On a world wide basis these genera are less readily distinguished. The larvae of *annulipes* have head horns similar to *Acanthothrips nodicornis* but smaller.

Holotype ♀ of *brevicollis*. NORWAY : Bygdo nr. Christiania, on lime trees, 27.vi.1909 (R.S.B.).

***Phlaeothrips bispinoides* Bagnall**

*Phloeothrips bispinoides* Bagnall, 1926c : 659-661.

*Phlaeothrips bispinoides* Bagnall ; Priesner, 1964 : 182.

This species is close to *annulipes* Reuter from which it differs in the darker tibiae and antennae, and the postocular setae which extend beyond the posterior margin of the eyes. Priesner gives the distribution as Switzerland, Germany and Czechoslovakia.

LECTOTYPE ♀. SWITZERLAND : Zurich, *Fagus*, vii.1925 (R.S.B.).

***Phlaeothrips coriaceus* Haliday**

*Phlaeothrips coriacea* Haliday, 1836 : 442-443.

*Phloeothrips immanis* Bagnall, 1927b : 582-584. **Syn. n.**

*Acanthothrips coriaceus* (Haliday) ; Stannard, 1957 : 25.

*Phlaeothrips coriaceus* Haliday ; Mound, 1966c : 126-128.

*Phlaeothrips* genus, with *coriaceus* Haliday as type-species, can be distinguished from *Acanthothrips* by the presence of four sense cones on antennal IV. The genus is very close to *Hoplandrothrips*, differing particularly in the form of the pelta, and it is also related to *Hoplothrips* whose species can usually be distinguished by their smaller eyes and weakly reticulate metanotum. *Phlaeothrips* and *Hoplandrothrips* species are usually macropterous, but wing reduction is common in *Hoplothrips*. Bagnall's species *immanis* is here regarded as a large form of *coriaceus*.

LECTOTYPE ♂ of *immanis*. SWITZERLAND : Sihwald, nr. Zurich, under logs, vii.1925 (R.S.B.).

***Phlaeothrips gallicus* Bagnall**

*Phloeothrips gallicus* Bagnall, 1934e : 494-495.

The unique holotype of this species has not been found in either the British Museum (Natural History) or the Paris Museum. The original data published were ; FRANCE : Fontainebleu, on grasses, 20.v.1914 (*Vuillet*).

***Phrasterothrips affinis*** Bagnall

(Text-fig. 60)

*Phrasterothrips affinis* Bagnall, 1924k : 633-634.

The present author has not examined *fuscus* Moulton, but the other species included in *Phrasterothrips* may be recognized as follows :

- |   |   |                           |
|---|---|---------------------------|
| 1 | Sculpture of metanotum consisting of a series of short parallel lines close together, not forming any reticulation medially ; epimera with one major seta .                   | <b><i>omercooperi</i></b> |
| - | Sculpture of metanotum reticulate medially, at least near extreme anterior border .   | 2                         |
| 2 | Median reticles of metanotum almost as broad as they are long ; epimera with two major setae ; anterior marginal setae of pronotum variable in length .                       | <b><i>conducans</i></b>   |
| - | Median reticles of metanotum narrow, broad only near anterior border ; epimera with one major seta ; anterior marginal seta of pronotum no longer than discal setae . . . . . | <b><i>affinis</i></b>     |

Further material is essential to the understanding of these species, since the anteromarginals are variable in *conducans* and the epimerals are variable in an undescribed species according to Stannard (1957). *P. affinis* is based on one male and one female.

Syntypes ♂ & ♀. BRAZIL (*J. Omer Cooper*, no. 79).

***Phrasterothrips conducans*** Priesner

(Text-figs. 61 &amp; 62)

*Phrasterothrips conducans* Priesner, 1921b : 210-213.*Phrasterothrips braziliensis* Bagnall, 1924k : 632. **Syn. n.**

This is the type-species of the genus, and the above synonymy is based on a comparison of the types of *braziliensis* with material determined as *conducans* by Priesner, collected in Brazil from galls on *Myrica* sp.

LECTOTYPE ♀ of *braziliensis*. BRAZIL (*J. Omer Cooper*, no. 67).

***Phrasterothrips omercooperi*** Bagnall

(Text-fig. 63)

*Phrasterothrips omer-cooperi* Bagnall, 1924k : 633.

The metanotal sculpture is rather similar to that of *affinis*, but in *omercooperi* the pronotal anteromarginals are well developed.

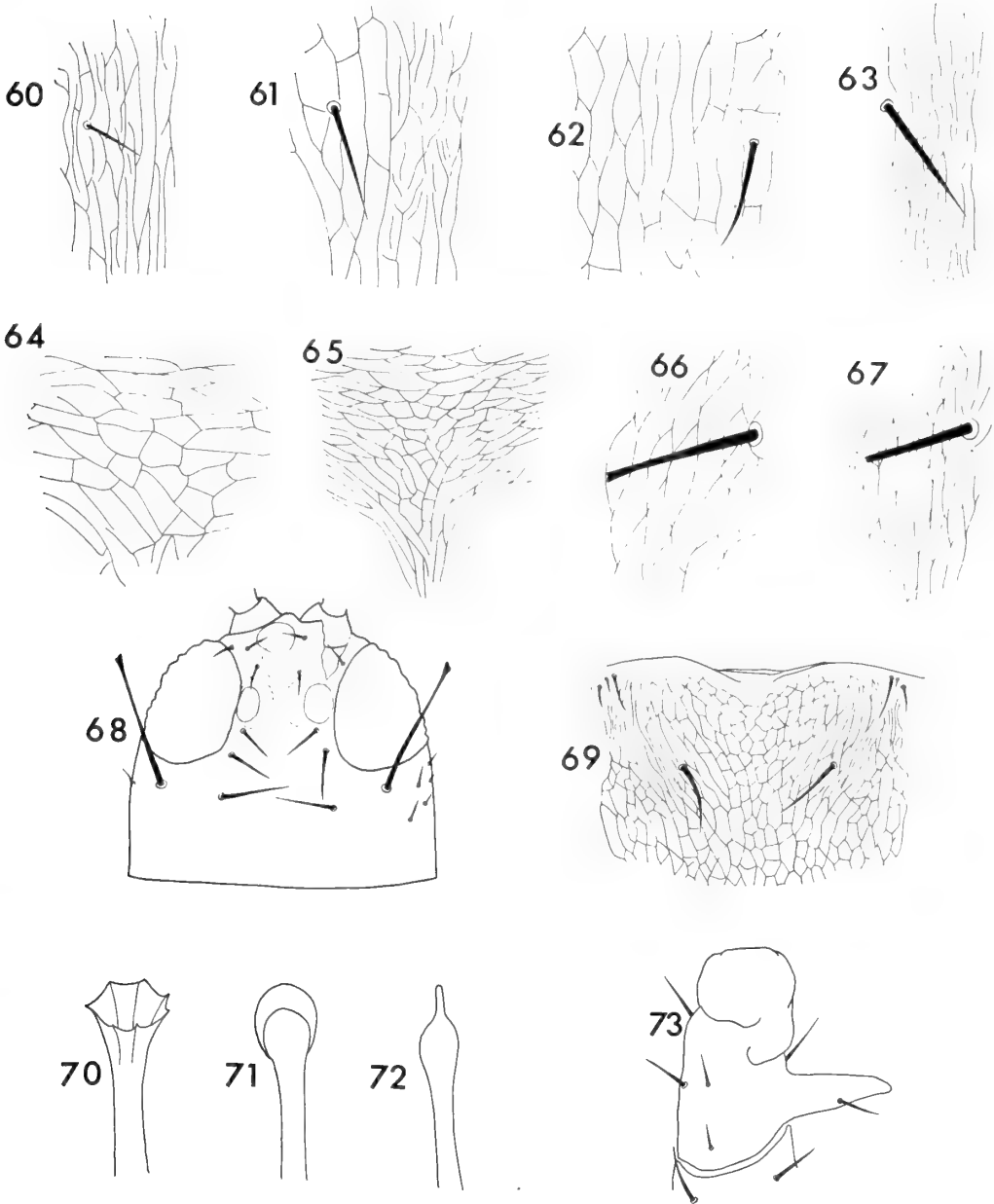
Syntypes ♀. BRAZIL (*J. Omer Cooper*, no. 79).

***Plectrothrips collaris*** Bagnall*Plectrothrips collaris* Bagnall, 1909j : 531-533.

According to Stannard (1957) *Plectrothrips* is well represented in the islands of the Western Pacific. *Kladothrips* has a rather similar pronotum, but in *Plectrothrips* the pelta is broad basally and the wing retaining setae only weakly developed.

Holotype ♂. INDONESIA : Isle of Nias (*K. Jordan*).





FIGS. 60-73. Figs. 60-63. *Phrasterothrips* species, metanotal sculpture near median setae : 60, *affinis*. 61, *brasiliensis*. 62, *conducans*. 63, *omercooperi*. Figs. 64-67. Sculpture of *Gigantothrips* species : 64, *tibialis*, anteromedian area of mesonotum. 65, *nigrodentatus*, anteromedian area of mesonotum. 66, *modestus*, median area of metanotum. 67, *turneri*, median area of metanotum. Fig. 68. *Trichinothrips breviceps* (*branderi* holotype). Fig. 69. *Liothrips similis*, metanotal sculpture. Figs. 70-72. Apex of major setae : 70, *Eurhynchothrips convergens*. 71, *Mimothrips hargreavesi*. 72, *Mystrothrips japonicus*. Fig. 73. *Isopterothrips tenuipennis*, fore tarsus of female.

**'*Podothrips*' *varicornis* Bagnall**

*Podothrips varicornis* Bagnall, 1919 : 275-276.

The well developed praepectal plates of the unique holotype indicate that this species is not an *Adraneothrips* (cf. Bagnall, 1929 : 606) since the members of that genus lack these structures, nor yet a true *Podothrips* as species in that genus have a greatly enlarged praepectus. Contrary to the original description there are no fore wing accessory cilia. Dr. zur Strassen hopes to erect a new genus for this species shortly as both he and the present author have received fresh material from South Africa.

Holotype ♂. SOUTH AFRICA : Cape Town, Sugar Bush flower, 13.vii.1914 (*E. B. Poulton*).

***POECILOTHRIPS* Uzel**

*Poecilothrips* Uzel, 1895 : 264. Type-species *P. albopicta* Uzel, by monotypy.

*Cephalothripoides* Bagnall, 1927b : 582. Type-species *Cephalothrips harrisoni*, by monotypy.

***Poecilothrips albopictus* Uzel**

*Poecilothrips albopicta* Uzel, 1895 : 264.

*Cephalothrips harrisoni* Bagnall, 1926e : 657-659. **Syn. n.**

*Poecilothrips albopictus* Uzel ; Pelikan, 1950 : 152-163.

The above synonymy is based on a comparison of the unique holotype of *harrisoni* with Californian material of *ornatus* Hood, a synonym of *albopictus*.

Holotype ♀ of *harrisoni*. FRANCE : Orlu near Ax, on cherry log (*R.S.B.*).

***POLYPHEMOTHRIPS* Schmutz**

*Polyphemothrips* Schmutz, 1909a : 276. Type-species *P. brasiliensis*, by monotypy.

*Panceratothrips* Bagnall, 1936 : 219-220. Type-species *P. typicus*, by monotypy. **Syn. n.**

*Polyphemothrips* Schmutz ; Stannard, 1957 : 76-78.

This synonymy is based on a comparison of Bagnall's material with Stannard's redefinition of the genus. The type-species, *brasiliensis*, is not known to the present author.

***Polyphemothrips caudatus* (Bagnall) comb. n.**

*Allothrips caudatus* Bagnall, 1915b : 595-596.

The unique holotype agrees closely with the definition of *Polyphemothrips* given by Stannard (1957). Antennal segments VII and VIII are almost fused, the maxillary stylets fairly broad, meeting in the centre of the head, and the reticulations on the head are upturned medially. The praepectus is absent, the pelta small and there are two pairs of wing retaining setae on each tergite. As a result of this new combination *Adelothrips caudatus* Hood, 1955 : 90-92 becomes a secondary homonym and is here renamed *Polyphemothrips adelos* **n. n.**

Holotype ♀. SARAWAK : Mt. Matang, 11.xii.1913 (*G. E. Bryant*).

***Polyphemothrips citricornis* (Bagnall) comb. n.**

*Cryptothrips citricornis* Bagnall, 1913f : 296.

The maxillary stylets meet in the centre of the head, and the reticulations on the dorsal surface of the head are upturned medially in this species. There are three sense cones on antennal III, and segments VII and VIII are broadly joined. The praepectus is absent, the anteromarginal pronotal setae apparently reduced, and there are two pairs of wing retaining setae on each tergite.

Holotype ♂. [TANGANYIKA] : Arusha, x-xi.1905 (*Katona*).

***Polyphemothrips typicus* (Bagnall) comb. n.**

*Panceratothrips typicus* Bagnall, 1936 : 220.

Two females from the original series have been studied. The species agrees closely with Stannard's redefinition of the genus *Polyphemothrips*. Antennal segments VII and VIII are closely united, there are three sense cones on III and four on IV. The maxillary stylets approach each other in the centre of the head, and the reticulations on the head turn toward the anterior in the midline. The pronotal major setae are all well developed, the praepectus absent and the mesopraesternum broad. The pelta is small and triangular, and the tergites each have two pairs of wing retaining setae.

LECTOTYPE ♀. MADAGASCAR : Province of Tanarive, Soanierane, 1905 (*A. Mathiaux*). Paris Museum. A paralectotype ♀ bearing similar data is in the British Museum (Natural History).

***PRIESNERIA* Bagnall**

*Priesneria* Bagnall, 1926d : 549. Type-species *P. kellyana*, by monotypy.

***Priesneria kellyana* Bagnall**

*Priesneria kellyana* Bagnall, 1926d : 549-550.

The unique holotype resembles *Karnyothrips* species in the stout median and posterior femora, the short tube and long apical setae, but the fore tarsus is not armed. The praepectus is present but the mesopraesternum is degenerate medially. The major setae have expanded apices but the pronotal anteromarginals are small. Bagnall refers to the heavy body but this is due to contraction of the abdominal segments prior to mounting. Two basal wing setae with expanded apices are visible, the pore of what is probably the first basal wing seta is rather small. The wing apices are missing. This genus can only be distinguished from the *Haplothrips* group by the short antennal III which bears one sense cone, and antennal IV which bears two sense cones. The antennae may be aberrant.

Holotype ♀. AUSTRALIA : Victoria, Melbourne, 10.iii.1925 (*R. Kelly*).

***Pselaphothrips pomeroi* Hood**

*Pselaphothrips pomeroi* Hood, 1916 : 11-12.

*Pselaphothrips nigeriensis* Bagnall, 1934b : 483-484. **Syn. n.**

This synonymy is based on a comparison of the type of *nigeriensis* with the descrip-

tion of *pomeroyi* from Cameroon and five other specimens from Nigeria. It is possible that *vuilleti* Karny, 1920b from Cameroon is also the same species.

The holotype of *nigeriensis* is a general specimen that has been treated with caustic alkali, and this explains the pale colour of the legs. The sexual dimorphism and the differences between the major and minor males are particularly interesting in this species. The female has short postocular setae close to the inner margin of the eye, unarmed fore tibiae, well developed pronotal anteromarginal setae, and four to six pairs of setae on the metanotum. The male has long postocular setae arising laterally on the cheeks, a small tooth on the inner margin of the fore tibia at its basal third, reduced anteromarginal setae, and eight or more pairs of metanotal setae. Oedymorous males have two femoral teeth instead of the single tooth found on each femur of the females and minor males. One oedymorous male from Nigeria has about sixteen pairs of metanotal setae. *Pselaphothrips* is similar to *Acanthothrips* and *Pristothrips*. The praepectus is absent, the mesopraesternum reduced, there are three sense cones on antennal III and four on IV, the mouth cone is very long, the pelta small, and there are two or more pairs of tergal wing retaining setae. The Nigerian specimens referred to above were taken at Ibadan, on Yam leaves, 7.vii.1964 (*B. A. Okwakpam*).

Holotype ♀ of *nigeriensis*. NIGERIA : Adio, 1926 (*O. B. Lean*).

### *Rhaebothrips major* Bagnall

*Rhaebothrips major* Bagnall, 1928b : 75-76.

*Rhaebothrips major* Bagnall ; Bianchi, 1953 : 108.

Bianchi has pointed out that records of this species from Hawaii and Fiji are mis-identifications. Bagnall's original specimen(?s) are not in the British Museum (Natural History), and the original data were : SAMOA : Upolu, Apia, 17.ix.1924.

### **RHOPALOTHRIPIDES** Bagnall

*Rhopalothripoides* Bagnall, 1929g : 174. Type-species *Rhopalothrips brunneus*, by original designation.

*Froggattothrips* Bagnall, 1929g : 175. Type-species *F. acaciae*, by original designation. **Syn. n.**

Head little longer than broad, slightly wider basally ; one pair of postocular setae, no ocelli. Maxillary stylets arise close to eyes, parallel to each other in middle of head, separated by a faint maxillary bridge ; mouth cone acute. Antennae eight-segmented, II narrowed to basal neck ; VI broad at apex as in *Cephalothrips* ; VII and VIII broadly united, VII not strongly constricted basally. Praepectus absent, mesopraesternum and basisterna degenerate. Fore tarsus armed ; wings absent, pterothorax reduced. Pelta four times as wide as long ; abdominal tergites II to VII with conspicuous transverse row of twelve or more small setae ; B<sub>3</sub> on tergite IX long and fine, B<sub>1</sub> and B<sub>2</sub> short and expanded as are the other major setae. Sternite VIII in male with a small circular glandular area near anterior margin.

*Froggattothrips* was based on two males and two females, all of which have the typical appearance of specimens starved or desiccated prior to their death. The abdominal segments are telescoped into each other resulting in a broadly ovate profile, and the mouth parts have been forced into the sternum of the prothorax giving a rounded appearance to the mouth cone. Of the five nominal species described by Bagnall in this group only two are here considered valid and these may be separated as follows :

- r Setae on abdominal tergite II tending to be arranged in two transverse rows ; pelta reticulate ; metanotum with twelve or more setae ; pronotum longer than the head in the male . . . . . **brunneus**
- Fewer setae on abdominal tergite II, in a single transverse row ; pelta with transverse lines only weakly joined to form reticles ; metanotum with ten setae ; male pronotum shorter than the head . . . . . **froggatti**

***Rhopalothripoides brunneus* (Bagnall)**

*Rhopalothrips brunneus* Bagnall, 1916b : 412.

*Rhopalothripoides brunneus* (Bagnall) Bagnall, 1929g : 174.

*Rhopalothripoides kellyanus* Bagnall, 1929g : 174-175. **Syn. n.**

*Froggattothrips acaciae* Bagnall, 1929g : 175-176. **Syn. n.**

*Froggattothrips inconsequens* Bagnall, 1929g : 176. **Syn. n.**

The five nominal species in this group were described originally from seven specimens. These specimens are imperfectly mounted and some of the differences between them are due to differing degrees of contraction. Thus the figures given by Bagnall for the relative lengths of the head and tube in *acaciae* and *inconsequens* are the result of measuring the exposed dorsal surface of the tube in one specimen and the full internal length of the tube in the other. The specimen labelled *kellyanus* is very small but apparently does not differ from the other forms in any detail. In the male of this species the pronotum is enlarged, longer than the head, whereas in the male holotype of *froggatti* the pronotum is small. It is possible that the latter species is a gynaeoid form of *brunneus*.

Holotype ♀. AUSTRALIA : Victoria, *Acacia dealbata* (R. Kelly).

Holotype ♀ of *kellyanus*. AUSTRALIA : Victoria, *Acacia dealbata*, collected with *brunneus* holotype (R. Kelly).

Holotype ♀ of *acaciae*. AUSTRALIA : New South Wales, Termeil, *Acacia* sp., 27.ix.1899 (W. W. Froggatt).

Holotype ♀ of *inconsequens*. AUSTRALIA : New South Wales, Termeil, *Acacia* sp., (with *acaciae* ♀ & 2 ♂) 27.ix.1899 (W. W. Froggatt).

***Rhopalothripoides froggatti* (Bagnall)**

*Rhopalothrips froggatti* Bagnall, 1916b : 411-412.

*Rhopalothripoides froggatti* (Bagnall) Bagnall, 1929g : 174.

Holotype ♂. AUSTRALIA : New South Wales, Upper Mangrove, in leaf glands of *Acacia decurrens*, 7.ix.1900 (W. W. Froggatt).

***SEDULOTHRIPS* Bagnall**

*Sedulothrips* Bagnall, 1915d : 503. Type-species *S. insolens*, designated by Moulton, 1933.

*Sedulothrips* Bagnall ; Stannard, 1957 : 82-83.

***Sedulothrips insolens* Bagnall**

*Sedulothrips insolens* Bagnall, 1915d : 503.

The unique holotype is not in the Hope Department at Oxford, nor in the British Museum (Natural History). The published data were ; TRINIDAD : in cracks of dead cacao tree.

***TETRACANTHOTHRIPS* Bagnall**

*Tetracanthothrips* Bagnall, 1915b : 594. Type-species *T. borneensis*, by monotypy.

***Tetracanthothrips borneensis* Bagnall**

*Tetracanthothrips borneensis* Bagnall, 1915b : 595.

The unique male holotype is not in the British Museum (Natural History) and has apparently been lost. The published data were : SARAWAK : Mt. Matang, xii.1913 (*G. E. Bryant*).

***TETRACERATOTHRIPS* Bagnall**

*Tetraceratothrips* Bagnall, 1924k : 628. Type-species *T. agrestis*, by monotypy.

This genus is very close to *Phaulothrips* but the unique holotype of *agrestis* is densely pigmented and many structural details cannot be observed. The postocular setae referred to by Bagnall arise laterally on the cheeks as in *Phaulothrips*. There are two sense cones on antennals III and IV, the pelta has slender lateral expansions, and the tube is sculptured and constricted apically. The maxillary stylets are broad and close together in the midline of the head. Further material is required in order to determine the validity of this genus.

***Tetraceratothrips agrestis* Bagnall**

*Tetraceratothrips agrestis* Bagnall, 1924k : 628-629.

Holotype ?♂. AUSTRALIA : [?N.S.W., 40 miles S. of Sydney,] Austinmer, Carnoy, iv.1914 (*L. Harrison*).

***Teuchothrips brevis* (Bagnall)**

*Mesothrips brevis* Bagnall, 1924k : 636-637.

*Teuchothrips brevis* (Bagnall) Bagnall, 1929h : 190.

This species and *parvus* Zimmermann differ from the other *Teuchothrips* species in having the maxillary stylets very low in the head and wide apart, also the median pronotal carina is very weakly developed. In the male the B<sub>1</sub> setae on tergite IX are acute and as long as the tube, B<sub>2</sub> setae are short and stout.

LECTOTYPE ♂. CEYLON : [galling pepper], (*E. E. Green*).

***Teuchothrips froggatti* (Bagnall)**

*Mesothrips froggatti* Bagnall, 1924k : 637.

*Teuchothrips froggatti* (Bagnall) Bagnall, 1929h : 190.

This species resembles *pittosporiicola* in having tergite IX B<sub>1</sub> setae of the male long and acute, and B<sub>2</sub> short and softly pointed. It differs from that species in lacking fore wing accessory cilia as do both *insolens* and *minor*, as well as the type-species of the genus *simplicipennis* Hood.

LECTOTYPE ♂. AUSTRALIA : New South Wales, Penshurst, nr. Sydney, *Callistemon* terminal leaf bud galls (*W. W. Froggatt*).

***Teuchothrips insolens* (Bagnall)**

*Mesothrips insolens* Bagnall, 1924k : 638.

*Teuchothrips insolens* (Bagnall) Bagnall, 1929h : 190.

This species resembles the type-species of the genus, *simplicipennis* Hood, in lacking fore wing accessory cilia and in having B<sub>1</sub> and B<sub>2</sub> on tergite IX of the female expanded apically and about two thirds as long as the tube. In the male B<sub>2</sub> is short and expanded. The postocular setae are as long as the eye whereas in *simplicipennis* they are shorter.

Syntypes ♂♂ & ♀♀. AUSTRALIA : Victoria, Healesville, *Leptospermum myrsinoides*, i.1917 (*R. Kelly*).

***Teuchothrips minor* Bagnall**

*Teuchothrips minor* Bagnall, 1929h : 193.

This differs from the other forms described in the genus without fore wing accessory cilia in having B<sub>1</sub> and B<sub>2</sub> on tergite IX short and subequal in length in both sexes, with the apices broadly expanded.

LECTOTYPE ♀. AUSTRALIA : New South Wales, Pt. Macquarie, in spirally curled leaf of *Melaleuca*, 3.ii.1900 (*W. W. Froggatt*).

***Teuchothrips pittosporiicola* Bagnall**

*Teuchothrips pittosporiicola* Bagnall, 1929h : 191-192.

This is the only described species in this genus known to the present author with B<sub>1</sub> and B<sub>2</sub> setae on tergite IX as long as or longer than the tube and with the apices acute. In *bursariicola* Priesner these setae are softly pointed or weakly expanded. The males of both species have B<sub>2</sub> setae short and stout, about one third as long as B<sub>1</sub>. The host associations of these thrips are apparently not as strict as Bagnall considered. The present author has recently studied specimens of *bursariicola* from deformed leaves of *Pittosporum phillyreoides* collected in Glen Osmond, South Australia.

LECTOTYPE ♂. AUSTRALIA : New South Wales, Botany, *Pittosporum* leaves, 14.iii.1900 (*W. W. Froggatt*).

***Teuchothrips sodalis* Bagnall**

*Teuchothrips sodalis* Bagnall, 1929h : 190-191.

The unique holotype is in fragments but B<sub>1</sub> setae on tergite IX are about as long as the tube and B<sub>2</sub> about half as long, the apices of both being weakly expanded.

Holotype ♂. AUSTRALIA : New South Wales, Pt. Macquarie, in spirally curled leaf of *Melaleuca*, 3.ii.1900 (*W. W. Froggatt*).

***Treherniella stoechas* Bagnall**

*Treherniella stoechas* Bagnall, 1927b : 578-579.

*Treherniella stoechas* Bagnall ; Priesner, 1964 : 204.

Syntypes ♂♂ and ♀♀. FRANCE : Ile d'Hyères, Porquerolles, *Helichrysum stoechas*, ix.1927 (*R.S.B.*).

**TRICHINOTHRIPS Bagnall**

*Trichinothrips* Bagnall, 1929e : 604-605. Type-species *T. branderi*, by original designation, regarded here as a synonym of *breviceps*.

Head about as wide as long ; maxillary stylets slender, wide apart low in head ; mouth cone short and rounded ; postocular setae expanded, longer than eyes ; two pairs of slender postocellar setae. Praepectus absent, mesopraesternum reduced medially, apparently fused to mesosternum ; midlateral and anteromarginal pronotal setae close to antero-angulars ; epimeral sutures incomplete. Metanotum with one pair of moderately stout setae ; fore wings with parallel sides and few accessory cilia ; pelta small and triangular ; tergites with two pairs of wing retaining setae ; B<sub>1</sub> and B<sub>2</sub> setae on tergite IX equal in length, longer than tube, with expanded apices.

Stannard (1957) indicates a relationship between this genus and *Phrasterothrips*, however *Trichinothrips* lacks sculpture medially on the metanotum and has antennal segments VII and VIII partially fused.

***Trichinothrips breviceps* (Bagnall)**

(Text-fig. 68)

*Trichaplothrips breviceps* Bagnall, 1926d : 550.

*Trichinothrips branderi* Bagnall, 1929e : 605-606. **Syn. n.**

*T. branderi* is here interpreted as a small specimen of *breviceps*.

Holotype ♂. CEYLON : Peradenyia, predatory on *Archipsoccus* (Psocidae), xii.1911 (*Fryer*).

Holotype ♂ of *branderi*. MALAYA : *Messua ferrea* (*J. Brander*).

***Trybomia elongata* (Bagnall)**

*Liothrips elongatus* Bagnall, 1910a : 382-383.

The unique holotype can be recognized as belonging to the genus *Trybomia* from



the extension of the eyes on the ventral surface of the head, and also the very long interocellar setae.

Holotype ♀. VENEZUELA : Los Adjuntas, 10.ix.1891 (*Meinert*).

### *Trybomia intermedia* (Bagnall)

*Liothrips intermedius* Bagnall, 1910a : 384-385.

The two syntypes of this species are not in the British Museum (Natural History) or the Copenhagen University Museum. The published data were : VENEZUELA : Los Adjuntas, 10.ix.1891 (*Meinert*). Priesner (1921 : 195) indicates that *phasma* Karny, the type-species of *Trybomia*, is a synonym of *intermedia*.

### *UROTHRIPS* Bagnall

*Urothrips* Bagnall, 1909g : 126. Type-species *U. paradoxus*, by monotypy.

From being the type-genus of a Sub-Order including ten or more genera, *Urothrips* was reduced to the level of a subgenus of *Amphibolothrips* by Stannard, who also gives a table summarizing the important characters of the other members of the group (1957 : 30).

### *Urothrips paradoxus* Bagnall

*Urothrips paradoxus* Bagnall, 1909g : 123-130.

This species is widespread between Kenya and South Africa.

Syntypes ♂ & ♀. [TANGANYIKA] : Arusha, x-xi.1905 (*Katona*).

## FOSSIL THYSANOPTERA

### *AEOLOTHRIPIDAE*

### *Archankothrips varicornis* (Bagnall)

(Text-fig. 75)

*Melanothrips* [*sic*] *varicornis* Bagnall, 1923a : 36.

*Archankothrips variicornis* [*sic*] (Bagnall) Bagnall, 1926b : 17.

Priesner (1924b) erected the genus *Archankothrips* for a male specimen in Amber of which the prothorax was damaged. In *varicornis* the posterior margin of the pronotum bears six or seven pairs of major setae, and there are three pairs of post-ocular setae visible. The distal prolongation of antennal II was referred to by Bagnall in 1926, but the four transverse lines on antennal IX may be an artefact. The lines are not true sutures but are similar in appearance to the lines found on antennal segments in the recent genus *Dactuliothrips*. The sensoria on antennals III and IV are broader than in *Ankothrips* but not as broad as in *Erotidothrips*.

Holotype ♀. In Baltic Amber, IB 436 ; Type slide 1436.V.I.

**EOCRANOTHRIPS** Bagnall

*Eocranothrips* Bagnall, 1926b : 17. Type-species *Melanothrips annulicornis*, by monotypy.

***Eocranothrips annulicornis*** (Bagnall)

(Text-figs. 74 & 80)

*Melanothrips* [*sic*] *annulicornis* Bagnall, 1923a : 36.

Two pairs of postocular setae are visible, one medially and one laterally, and there is a pair of stout interocellar setae. One pair of postero-angular pronotal setae is elongate, with about four pairs along the hind margin, and there is one pair of well developed anteromarginals. The antennae are much as in *Cranothrips* but the sensoria on III and IV are not visible.

Holotype ♀. In Baltic Amber, IB 186 ; Type slide no. 186.

**RHIPIDOTHRIPOIDES** Bagnall

*Rhipidothripoides* Bagnall, 1923a : 36. Type-species *R. abdominalis*, by monotypy.

***Rhipidothripoides abdominalis*** Bagnall

(Text-fig. 78)

*Rhipidothripoides abdominalis* Bagnall, 1923a : 36.

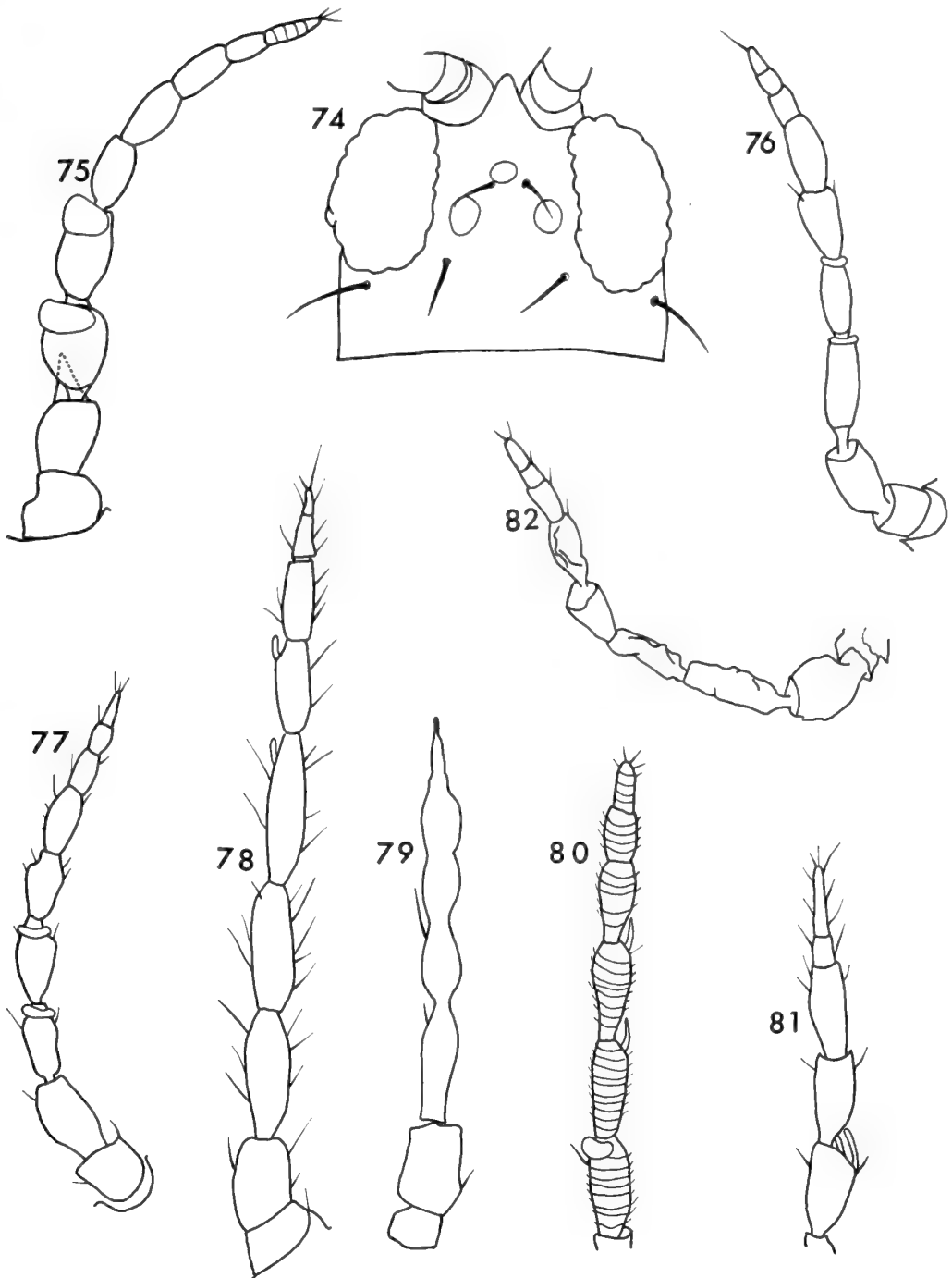
This species occupies a position between *Melanthrips* and *Rhipidothrips*. Antennal segments VII to IX are connate but the fore wing has well developed cross veins and both longitudinal veins join the ring vein well before the wing apex. There are three pairs of ocellar setae, pair III about 95 $\mu$  long arises within the ocellar triangle. The head is retracted into the prothorax and so the postocular setae, if present, are obscured. The pronotal anteromarginal, midlateral, postero-angular and posteromarginal setae are long and fine, about 100 $\mu$  long, the antero-angulans rather shorter.

Holotype ♀. In Baltic Amber, IB 444.

**HETEROTHRIPIDAE****HEMITHRIPS** Bagnall

*Hemithrips* Bagnall, 1923a : 37. Type-species *H. femoralis*, by original designation.

Bagnall erected this genus as the type-genus of a new family, although that group is now given the status only of a tribe. The antennae show some relationship to the Melanthripini in the Aeolothripidae, but the ovipositor is typically Thripid and the head and pronotum lack major setae. In two of Bagnall's species the venal setae are all small and the wings *Anaphothrips*-like, but in *antiquus* the setae are stout. The following four names were given to figures of amber inclusions published by Schlechtendal (1887), *parallelicornis*, *schlechtendali*, *setosus*, and *thoracicus*. Bagnall did not examine the original material of these forms and their identity and relationships remains equivocal.



FIGS. 74-82. Amber Inclusion. Fig. 74. *Eocranothrips annulicornis*, head. Figs. 75-82, Antennae: 75, *Archankothrips varicornis*. 76, *Hemithrips simplex*. 77, *Hemithrips antiquus*. 78, *Rhipidothripoides abdominalis*. 79, '*Heliothrips*' *scudderi*. 80, *Eocranothrips annulicornis*. 81, *Oxythrips physothripoides*. 82, *Hemithrips femoralis*.

***Hemithrips antiquus*** Bagnall

(Text-fig. 77)

*Hemithrips antiquus* Bagnall, 1923a : 38.

No major setae are visible on the head and prothorax and the ovipositor is down-curved. However the antennae are typically Melanthripid with an apical annular sensorium on III and IV. The fore wings are 650 $\mu$  long and 70 $\mu$  broad medially, rather narrowed apically, but unlike *femoralis* the setae on the costa and both longitudinal veins are stout, 35–50 $\mu$  long.

Holotype ♀. In Baltic Amber, without data.

***Hemithrips femoralis*** Bagnall

(Text-fig. 82)

*Hemithrips femoralis* Bagnall, 1923a : 38.

The fore wings are similar to some *Anaphothrips* species, about 45 $\mu$  wide medially. Both first and second veins apparently have a continuous row of small setae, and contrary to the original description, the costal setae are equally small (5 $\mu$ ). Bagnall probably interpreted the costal cilia as setae. The metanotum is reticulate without large setae, and no setae can be seen on the prothorax. A pair of small interocellar setae are present between the anterior margins of the hind ocelli, and there appear to be two pairs of small postocular setae. Only the four apical antennal segments are undistorted, but III and IV are apparently cylindrical. The fore femora are enlarged and the external apical margin bears a ridge.

Holotype ♀. In Baltic Amber, without data.

***Hemithrips parallelicornis*** Bagnall*Hemithrips parallelicornis* Bagnall, 1924g : 158.

This is based on Schlechtendal's illustration 4, which was originally considered to represent the male of *Thrips excellens* Schlechtendal, 1887.

***Hemithrips schlechtendali*** Bagnall*Hemithrips schlechtendali* Bagnall, 1924g : 158.

This is based on illustrations 5 to 8 by Schlechtendal (1887), which were originally considered to represent forms of *Thrips excellens* females.

**'*Hemithrips*' setosus** Bagnall(?) *Hemithrips setosus* Bagnall, 1924g : 158.

A pair of major pronotal postero-angular setae are indicated on illustration 3 on which this species is based. Schlechtendal (1887) drew the figure to represent a male of *Thrips excellens*.

***Hemithrips simplex*** Bagnall

(Text-fig. 76)

*Hemithrips simplex* Bagnall, 1923a : 38.

The specimen labelled 'Type' is in a roughly cut piece of amber and is not easy to examine, the following observations therefore refer to the second specimen (no. 10,364) which is apparently conspecific. The antennae are well preserved, III and IV bearing an apical annular sensorium. Contrary to the original description the costal setae are as small as on the other two veins, the fore wing being very similar to that of *femoralis*. Three pairs of minute ocellar setae are visible, pair I anterolateral of the first ocellus, pair II posterolateral of that ocellus close to the compound eyes, pair III between the hind ocelli. This species is very similar to *femoralis* but the fore femora are not enlarged.

Holotype ♀. In Baltic Amber, Phys. Oek. Ges. No. 9854.I.14. No. 3.  
♀. In Baltic Amber, Phys. Oek. Ges. No. 10,364.I.14. No. 1.

***Hemithrips thoracicus*** Bagnall*Hemithrips thoracicus* Bagnall, 1924g : 159.

This is based on Schlechtendal's illustration 12 which was considered originally to represent a form of *Thrips pennifera* Schlechtendal, 1887.

**STENUROTHRIPS** Bagnall*Stenurothrips* Bagnall, 1914g : 484. Type-species *S. succineus*, by monotypy.

The tenth abdominal segment of the species in this genus is greatly elongate as in the recent genus *Macurothrips*. From the form of the antennae *Stenurothrips* appears to be related to the Heterothripidae, whereas *Macurothrips* is a Thripid with forked sense cones on antennals III and IV. Stannard (1956a) has discussed the systematic position of *Stenurothrips*.

***Stenurothrips brevisetis*** Bagnall*Stenurothrips brevisetis* Bagnall, 1923a : 37.

This is a very poorly preserved specimen on which little detail can be made out due to fractures in the amber. The fore wing venal setae however are about half as long as those in *succineus*.

Holotype ♀. In Baltic Amber, IB 428.

***Stenurothrips succineus*** Bagnall*Stenurothrips succineus* Bagnall, 1914g : 484-485.

Three pairs of ocellar setae are present, pair III arise within the ocellar triangle as indicated in Bagnall's original figure.

Holotype ♀. In Baltic Amber, without data.

**THRIPIDAE****AMORPHOTHRIPS** Bagnall

*Amorphothrips* Bagnall, 1924h : 252. Type-species *A. klebsi*, by monotypy.

***Amorphothrips klebsi*** Bagnall

*Amorphothrips klebsi* Bagnall, 1924h : 252.

The description of this genus and species was quite inadequate and the type specimen has not been found in Bagnall's collection. The published data were ; sex uncertain, in Baltic Amber, Koenigsberg Coll., labelled Dr. Richard Klebs, Mus. Stanten and Becker.

***Caliothrips cordatus*** (Bagnall) **comb. n.**

*Selenothrips cordatus* Bagnall, 1924e : 131.

The specimen is well cleared and the sculpture of the body is easily observed. The sculptured reticles of the head, pronotum and mesonotum have internal wrinkles, and although the abdomen is strongly contracted the sculpture is very similar to that found in *striatus* Hood. The first vein of the fore wing bears 5 + 2 setae, and the second vein bears 4 setae opposite the interval in the first vein.

Holotype ♀. In Baltic Amber, without data.

**ELECTROTHRIPS** Bagnall

*Electrothrips* Bagnall, 1924h : 251-252. Type-species *E. hystrix*, by monotypy.

***Electrothrips hystrix*** Bagnall

*Electrothrips hystrix* Bagnall, 1924h : 252.

Three pairs of ocellar setae are developed, pair III arising within the ocellar triangle. Pairs II and III are very long, subequal in length to the single pair of elongate postoculars (50μ). The anterior margin of the pronotum is partially obscured but apparently lacks elongate setae, however there are two pairs of elongate postero-angulars. The costal setae on the fore wing are long and stout and the first vein is apparently close to the costa. The antennae are probably eight-segmented, V being longer and stouter than VI. Most of the specimen is obscured by fractures in the amber.

Holotype ♀. In Baltic Amber, without data.

**EOCEPHALOTHRIPS** Bagnall

*Eocephalothrips* Bagnall, 1924g : 160. Type-species *Thrips capito* Schlechtendal, 1887 : 579, by monotypy.

This genus was erected for the species *capito* which Schlechtendal figures as having the bases of the antennae broadly pyramidal. The text states that the median antennal segments are not clearly visible.

**' *Heliothrips* ' *scudderi* Bagnall**

(Text-fig. 79)

*Heliothrips scudderi* Bagnall, 1924e : 131-132.

The wings are folded on the back of this specimen, but tergite II is apparently constricted basally and on tergite VII a curved wing retaining seta is visible on one side. No major setae can be distinguished on the fore wings although the first vein is apparently fused with the costa, and costal fringe cilia are present. The specimen appears to be congeneric with *Dinuothrips frontalis*, but surface damage to the amber piece and also internal fractures make definite generic placement impossible at present.

Holotype ♀. In Baltic Amber, IB 443.

***Oxythrips physothripoides* (Bagnall)**

(Text-fig. 81)

*Homothrips physothripoides* Bagnall, 1924e : 131.*Oxythrips physothripoides* (Bagnall) ; Mound, 1968b.

The holotype is a male and bears a pair of stout thorn-like setae medially on tergite IX. The single pair of pronotal postero-angular setae are about 40µ long. The first vein of the fore wing has a wide interval in the setal row and two setae apically, the second vein bears seven setae. The bases of the antennae obscure the head but a forked sense cone is visible on antennal IV.

Priesner (1929b) has described female specimens in the genus *Oxythrips* from Baltic Amber.

Holotype ♂. In Baltic Amber, Phys. Oek. Ges. No. 11,063.I.14. No. 9.

***Physothrips connaticornis* Bagnall***Physothrips connaticornis* Bagnall, 1924e : 133.

The holotype female has not been found in Bagnall's Collection. The original publication gave no reference number.

**[ *Physothrips gracilicornis* Bagnall***Physothrips gracilicornis* Bagnall, 1924e : 132.

The holotype female has not been found in Bagnall's Collection. The published data were Phys. Oek. Ges. No. 9855.I.14. No. 2.

***Physothrips succineus* Bagnall***Physothrips succineus* Bagnall, 1924e : 132-133.

The specimen is a distorted teneral female and its generic position is not clear. There are three pairs of ocellar setae, pair III 30µ long, just within the lateral sides of the ocellar triangle. The postero-angular pronotal setae are 50µ long, but the posteromarginals are not visible. The first vein of the fore wing has two distal and nine basal setae, the second vein has thirteen setae. The eighth tergal comb is not visible.

Holotype ♀. In Baltic Amber, IB 411.

**PROCEROTHRIPS** Bagnall

*Procerothrips* Bagnall, 1924h : 252. Type-species *P. cylindricornis*, by monotypy.

***Procerothrips cylindricornis*** Bagnall

*Procerothrips cylindricornis* Bagnall, 1924h : 252.

The holotype female has not been found in Bagnall's Collection. The published data were ; B.S.d. Univers. Koenigsberg ; Pr. 3B.671.

***Taeniothrips clavicornis*** (Bagnall) **comb. n.**

*Physothrips clavicornis* Bagnall, 1924e : 133.

This species has four pairs of posteromarginal pronotal setae whereas *Physothrips* species usually have only two pairs. There are three pairs of ocellar setae present, pair III on the anterior margins of the ocellar triangle. The two pairs of pronotal postero-angular setae are 20 $\mu$  long, the metanotum is reticulate and both pairs of metanotal setae are at the anterior margin. The second vein of the fore wing bears nine setae but the first vein apparently has only one medial and one distal seta. The eighth tergal comb is not visible but there are no sternal accessory setae. The antennae are distorted and not horizontal but a forked sense cone can be seen on antennal IV.

Holotype ♀. In Baltic Amber, IB 422.

**PHLAEOTHRIPIDAE*****Hoplothrips minutatim*** (Bagnall)

*Trichothrips minutatim* Bagnall, 1929c : 99-100.

The ventral surface of the prothorax is clearly visible and both praepectal and basisternal plates are absent.

Holotype ♀. In Baltic Amber, XB 2387.

**LIOTRICHOTHRIPS** Bagnall

*Liotrichothrips* Bagnall, 1929c : 97. Type-species *L. hystrix*, by original designation.

In the three following species the pelta is broad, and both the metanotum and pelta are reticulate. The median metanotal setae are stout and the tergites each have one pair of wing retaining setae.

***Liotrichothrips antiquus*** Bagnall

*Liotrichothrips antiquus* Bagnall, 1929c : 98-99.

Holotype ♀. In Baltic Amber, XIII. B980.



***Liotrichothrips discrepans*** Bagnall

*Liotrichothrips discrepans* Bagnall, 1929c : 99.

Holotype ♀. In Baltic Amber, IB 432.

***Liotrichothrips hystrix*** Bagnall .

*Liotrichothrips hystrix* Bagnall, 1929c : 97-98.

Holotype ♀. In Baltic Amber, without data.

***Phlaeothrips schlechtendali*** Bagnall

*Phlaeothrips schlechtendali* Bagnall, 1929c : 96.

This is a true *Phlaeothrips* species as indicated by the tubercles on the cheeks, the reticulate metanotum and the broad pelta.

Holotype ♀. In Baltic Amber, 3618.V.595.

**SCHLECHTENDALIA** Bagnall

*Schlechtendalia* Bagnall, 1929c : 96. Type-species *S. longitubus*, by monotypy.

***Schlechtendalia longituba*** Bagnall

*Schlechtendalia longitubus* Bagnall, 1929c : 97.

Although antennal segment eight is broad basally it is not closely united to segment seven.

Holotype ♀. In Baltic Amber, without data.

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